

CHEMISTRY
FORM ONE

SECTION A (44 Marks)

1. What is a pure substance? {1 mark}

.....

..... Define the

the

following terms.

a) Radical. {1 mark}

b) Acid. {1 mark}

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2. State **TWO** reasons why most of the chemistry apparatus are glassware.

{2 marks}

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.....
.....

3. Complete the table below. {2 m arks}

Parameter	Apparatus used to measure	Units
Volume		
Temperature		

4. Name any **TWO** industries that have benefited from the knowledge of chemistry. {2 m arks}

.....
.....

5. What do the following laboratory signs mean?

a)b)



d).



c).

6. State why it is important to adhere to the following laboratory rules.

{2 marks}

a) Label all the chemicals

.....

..... b) Never

eat anything in the laboratory.

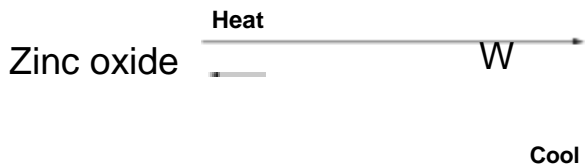
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..... Write a

chemical equation showing the reaction between sodium metal and excess

oxygen. {1 mark}

7. Study the equation below.



a) What is the colour of substance W

.....{½ m ark}

b) What type of change is represented in the above equation? {½mark}

.....
.....

c) Give another example of the change named in b) above.{1mark}

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.....

8. a). Name any **FOUR** apparatus that are necessary to carry out fractional distillation of a mixture containing Distilled water and Ethanol

in the laboratory. {2 m arks}

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b). Which of the two components of the mixture will form the first fraction.

Explain. {1 mark}

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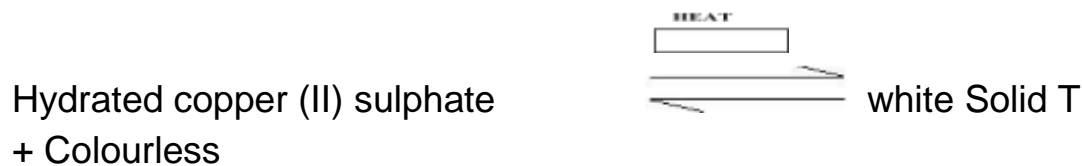
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c). State one industrial application of fractional distillation. {1 mark}

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9. Study the equation below.



Liquid H

a) Identify the;

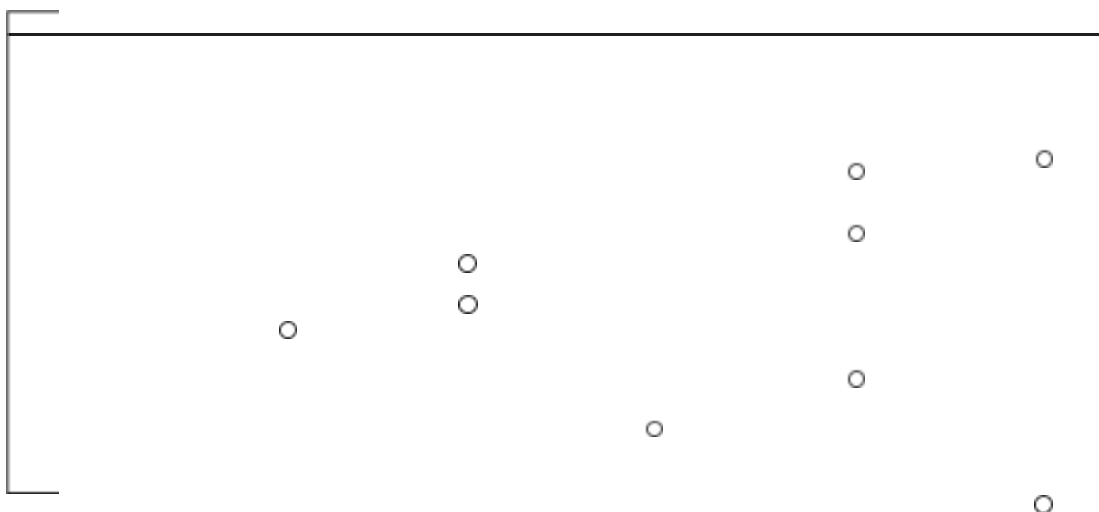
i).White solid T

- ii). Colourless liquid H{1 mark}
- b) If Hydrated Copper (II) Sulphate had FIVE water molecules, write the chemical equation for the above reaction. {1 mark}

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10. During the 2012 London Olympic Games, samples from four Decathlon participants (Morgan, Bolton, Jimmy and Jade) were taken and tested for presence of two illegal steroids A and B. Paper chromatography was used for the test.





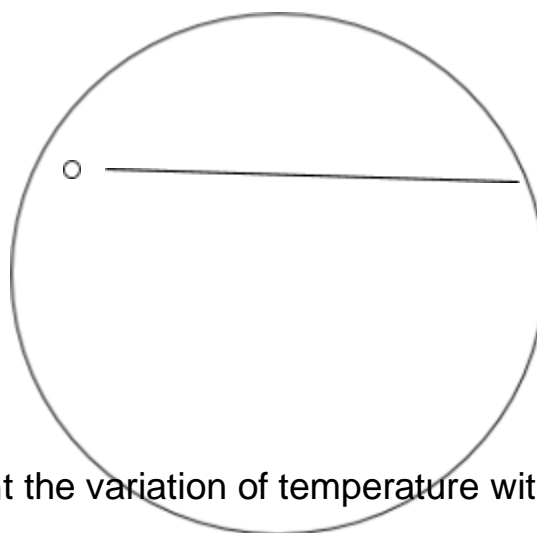
Steroid A Steroid B Morgan Bolton Jimmy Jade

a) Which athlete(s) tested positive for the illegal steroid? {1 mark}

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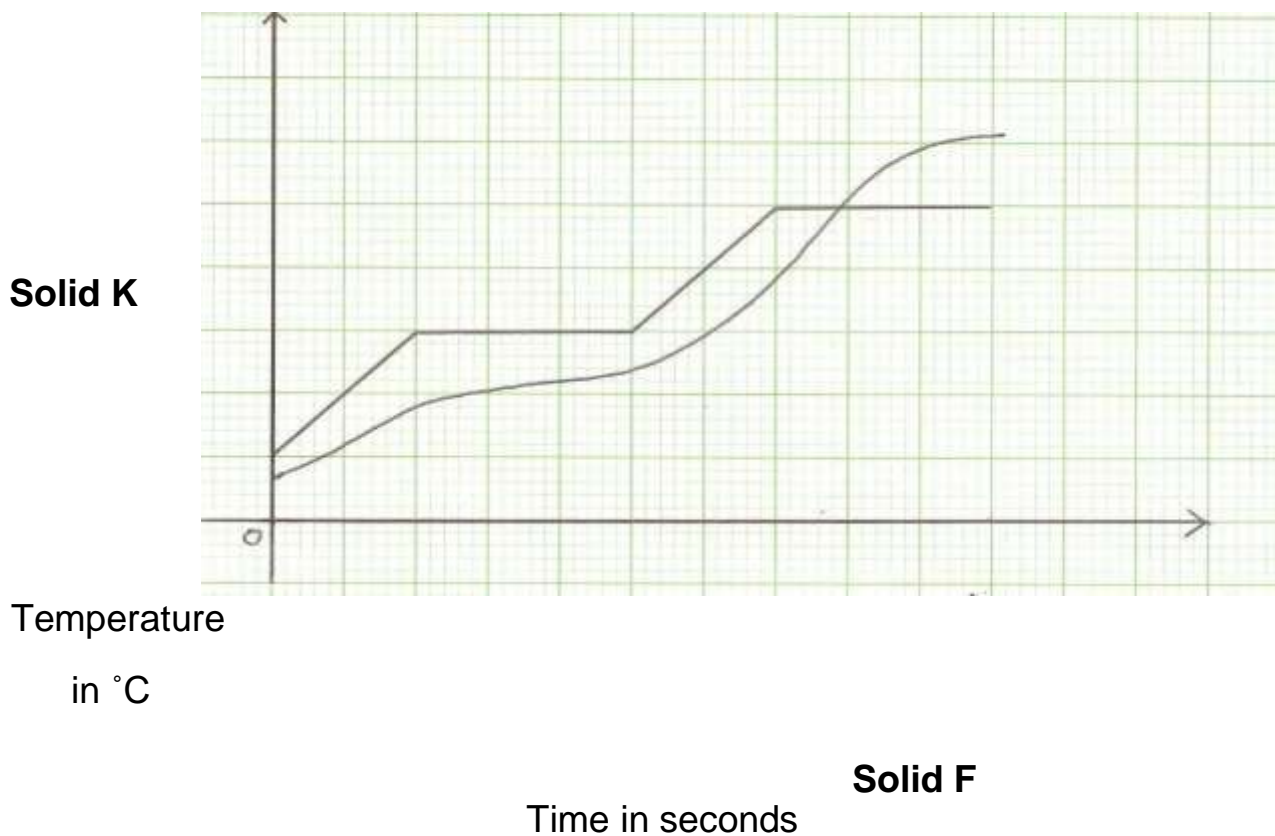
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b) On the filter paper representation below, draw the results for the Bolton. {2



11. The curves below represent the variation of temperature with time when marks}

pure and impure samples of a solid were heated.



a) Which of the two curves shows the variation in temperature for pure solid?

Explain. {2 marks}

b) If 300 grams more of the pure substance was added to the sample, show on the graph the time that the sample the pure substance will boil. {½ mark}

c) On the graph above, indicate the boiling point of the pure substance. {1/2 mark}

12. Arnold, a student from Starehe Boys' Centre Situated 3050m above the sea level boiled 100cm³ of pure water. Another student, Annette, from Mombasa 0 metres above the sea level boiled the same volume of pure water.

i. Which of the two students took the longest time to boil water? {1mark}

.....

ii. Explain your answer in d, i) above? {1 mark}

.....

.....

13. Describe the steps you would take to obtain common salts from sand that were mixed accidentally salt. {3 marks}

14. Complete the table below. {2 marks}

	Solid	Liquid	Gas
Shape			Indefinite
Volume		Fixed	Not fixed
Density	Very high	High	
Packing of molecules	Tight	Apart	Far apart

15. a). Draw a well labelled diagram showing how electrical conductivity of

a given solid can be tested in the laboratory.

b). Name one non-metal that conducts electricity {1 mark}

.....

.....

16. Study the diagrams below.

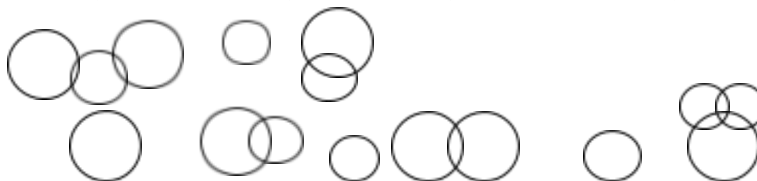
Q1

Q 2

Q 3

Q 4

Q 5



Which of the following sets of drawing clearly illustrates?

{2 marks}

a) Hydrogen molecule (H_2)

.....

b) Ammonia molecule (NH_3)

.....

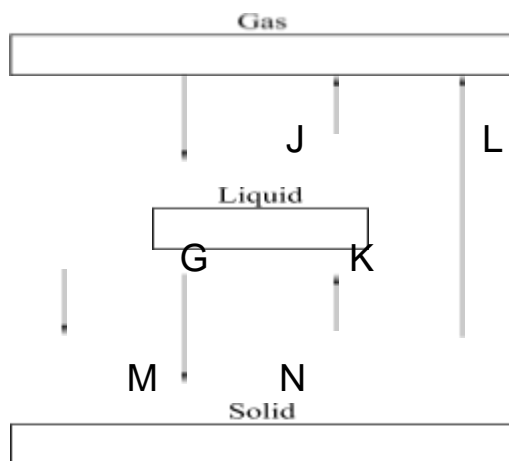
c) Helium molecule (He)

.....

d) Mixture of Sodium Chloride ($NaCl$) and Helium (He)

.....

17. The figure below shows the changes that take place between states of matter.



a) Give the names of the processes J and K.

{1 m ark}

J

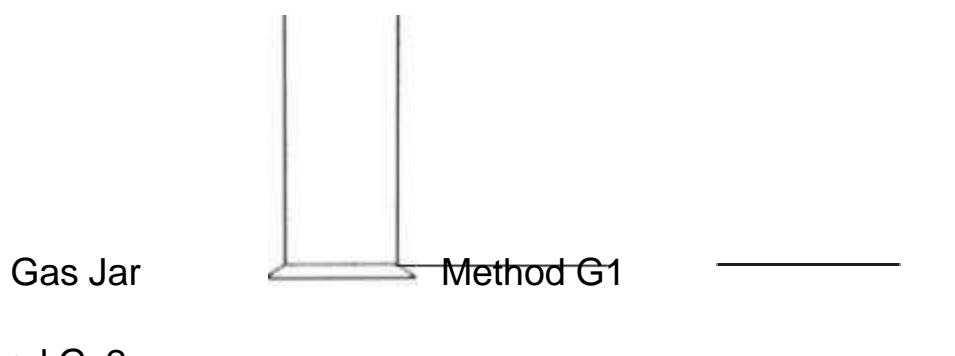
K

b) Name one substance that can undergo process K when left in an open container. {1 m ark}

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18. Below are two methods of collecting gases in the laboratory.

Gas in



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G as in _____

a) Name the methods represented by G 2.

..... {1/2 m ark}

b) Name an example of gas that can be collected using G 1.

..... {1/2 m ark}

SECTION B : (56 Marks)

19. What is the meaning of the following?

c) i). D rug. {1 m ark}

.....
ii). D osage. {1 m ark}

.....
iii). D rug addiction. {1
mark}



.....
.....

d) Differentiate between Over the Counter (OTC) drugs and Prescription Drugs.

{1 mark}

.....
.....

e) Mr. Rudisha went to a doctor who sent him to a pharmacy to pick some drugs. The pharmacist wrote on the medicine packaging 2X3. Clearly state what 2X3 meant. {1 mark}

t

f) State two reasons why it is important to adhere to the doctor's prescription.

{2 marks}

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g) State **THREE** common effects that tobacco smoking and alcohol consumption have. {3 marks}

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20. The diagram below show the apparatus used to prepare oxygen in the laboratory.

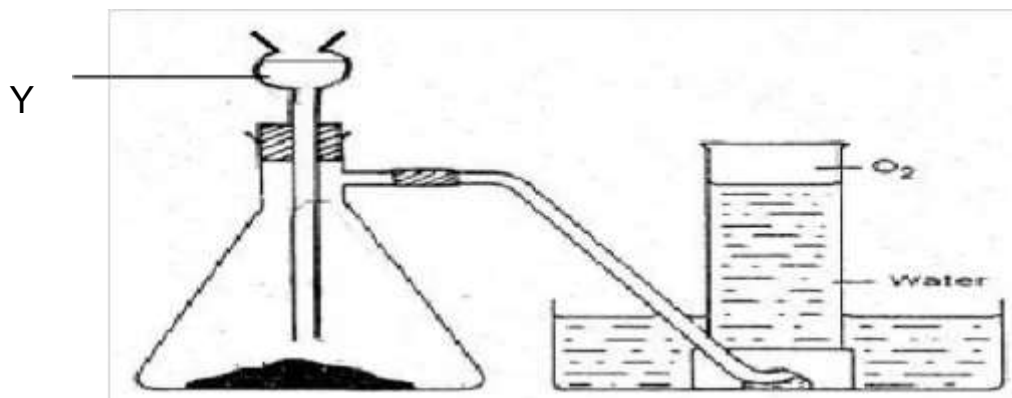
Black Solid X



a) Name the reagents X and Y {2 marks}

Y X
.....

b) Why is reagent X used yet reagent Y can decompose to produce O₂ gas? {1 mark}



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.....

c) Why is it possible to collect oxygen gas using the method above? {1 mark}

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d) State **TWO** other physical properties of Oxygen gas {2 marks}

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e) Describe the test you would carry to prove that the gas collected is Oxygen. {2 marks}

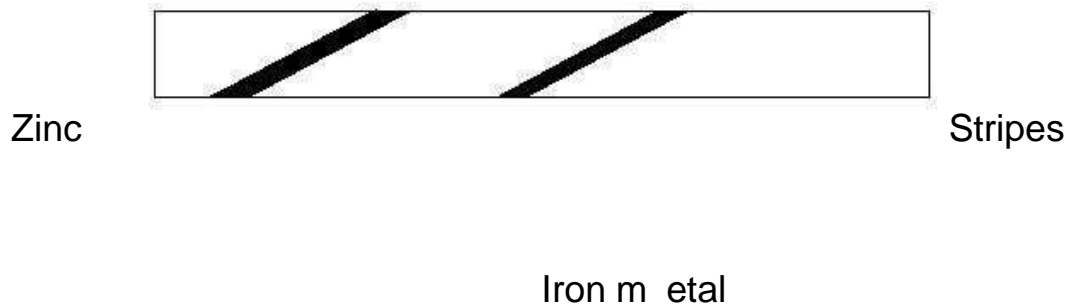
f) Write the chemical name and chemical formulae of rust.
{2 marks}

t .

Name

Formula.....

g) The diagram below illustrates one of the methods used to prevent rust, study it carefully.



h) Which method of rust prevention is shown in the diagram above?

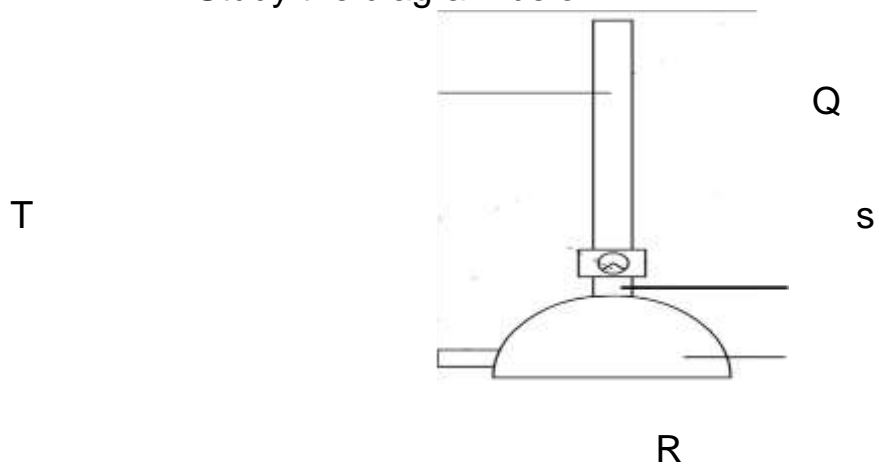
{1 mark}

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.....

i) Why is it possible to prevent rust using the method named in g) above?

{1 m ark}

21. Study the diagram below.



a)The apparatus is used to heat substances in the laboratory.

t . . .

- i. Name the parts marked with letters Q , R , S and T (Name on the diagram)

{2 marks}

- ii. Describe **FIVE** Steps followed when lighting the apparatus above.

{2½ marks}

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- iii. On what flame should the apparatus be left when not being used in the laboratory? {½ mark}

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iv. State **TWO** reasons for the answer given in iii) above.

{2 marks}

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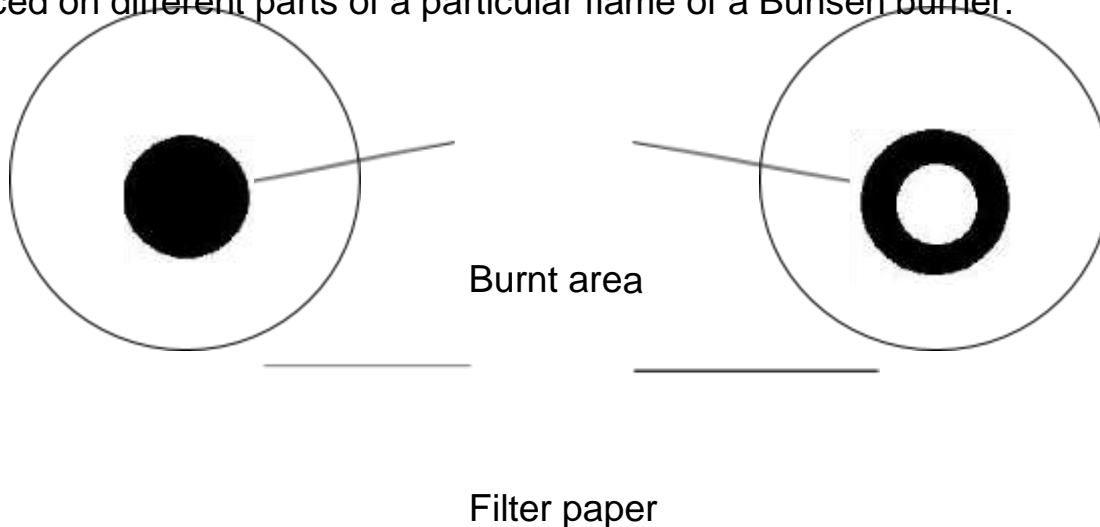
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b)The diagram below shows the appearances of two pieces of filter papers placed on different parts of a particular flame of a Bunsen burner.



i. Which flame of the Bunsen burner was used for the experiment?

{1mark}

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ii. What conclusion can you make from the above experimental results?

{2 marks}

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22. a). Define the following.

i. Element. {1

mark}

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.....

.....

ii. Compound. {1 m ark}

b). Write the chemical symbols for the following elements.

{1 mark}

i. Chlorine ii). Sodium

.....

c). Write the name of the elements represented by the following chemical symbols. {1 mark}

i). K

ii). F.....

d). How many elements make up the following compounds?

i. $\text{Na}_2\text{CO}_3 \cdot \text{NaHCO}_3 \cdot 2\text{H}_2\text{O}$ {1

mark}

.....

ii. NaHCO_3 {1

mark}

.....

.....

e). Write the chemical formulae of the following chemical compounds. (Show your working)

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- i. Aluminium phosphate. {1
mark}

ii. Copper nitrate. {1
mark}

iii. Magnesium sulphate. {1
mark}

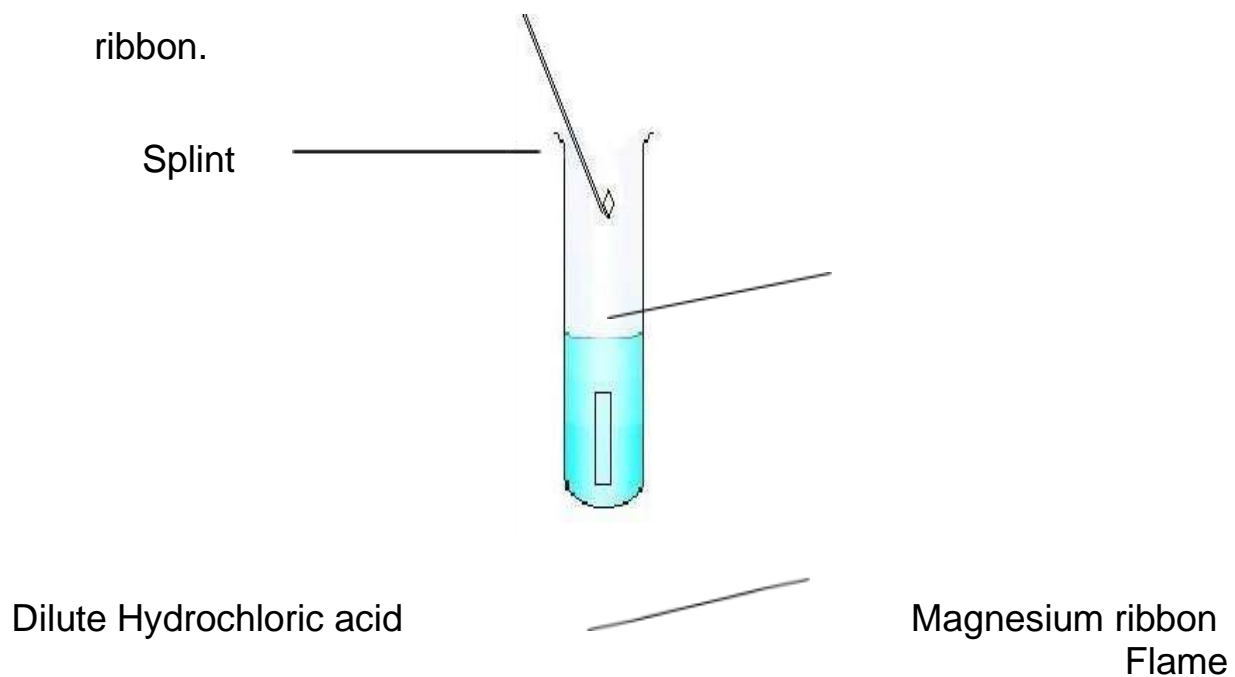
f). Write the number of atoms of each element present in the following
compounds.

i. H_2SO_4 {1 mark}

- ii. $\text{CuSO}_4 \cdot 10\text{H}_2\text{O}$ {1
mark}

iii. Na_2CO_3 {1
mark}

23. The diagram below shows the action of dilute acids on a magnesium ribbon.



a) State any **TWO** observations made from the above set up.

{2 marks}

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.....

.....

b) Write a chemical equation for the reaction taking place between the acid and the metal.

{1 mark}

c) The following is a list of some pH values; 2, 4, 5, 7, 9 and 13. Complete the table below indicating the appropriate pH values.

{2 marks}

Substance	pH Value
Dilute hydrochloric acid	
Wood ash Solution	

Orange juice	
Distilled w ater	

d) State one advantage of using the universal indicator over flower extract indicators. {2 marks}

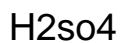
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e) What is a “neutralization reaction”? {1 mark}

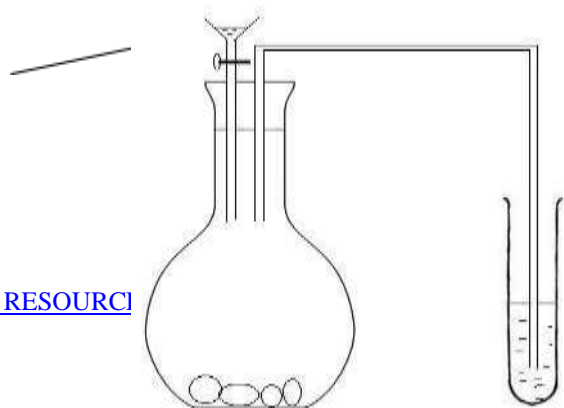
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f) In another experiment students reacted sulphuric (VI) acid with solid P which is a compound of magnesium. A colourless solution Q was formed with

production of a



colourless gas Z.



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When the colourless gas Z was bubbled in lime water, it formed a white precipitate.

i. Identify colourless gas Z.

{1 mark}

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ii. Identify compound P. {1 mark}

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.....

iii. Write the chemical formula of compound P. {1 mark}

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.....

iv. Name colourless solution Q . {1 mark}