**TUNE UP EXAMS TERM1 APRIL /MAY 2022**

**FORM 3**

**CHEMISTRY EXAM**

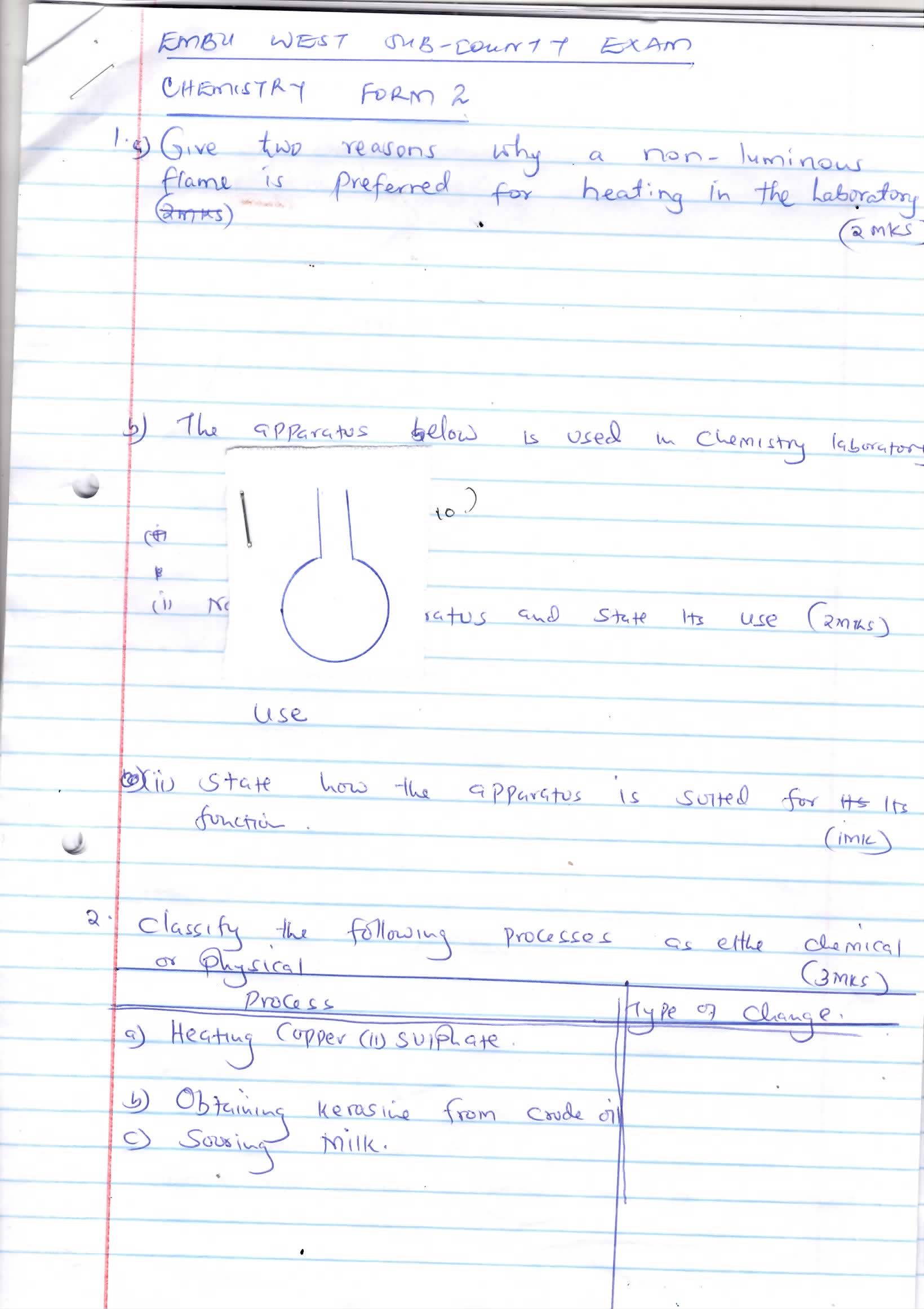
**TIME:**

**NAME:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ADM:\_\_\_\_\_\_\_\_\_CL:\_\_\_\_\_**

1.a) Give two reasons why a non-luminous flame is preferred for heating in the laboratory. (2 mks)

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b) The apparatus below is used in chemistry laboratory.



i) Name the apparatus and state its use. (2 mks)

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Use:

………………………………………………………………………………………………………………………………………………………………………………………………………………

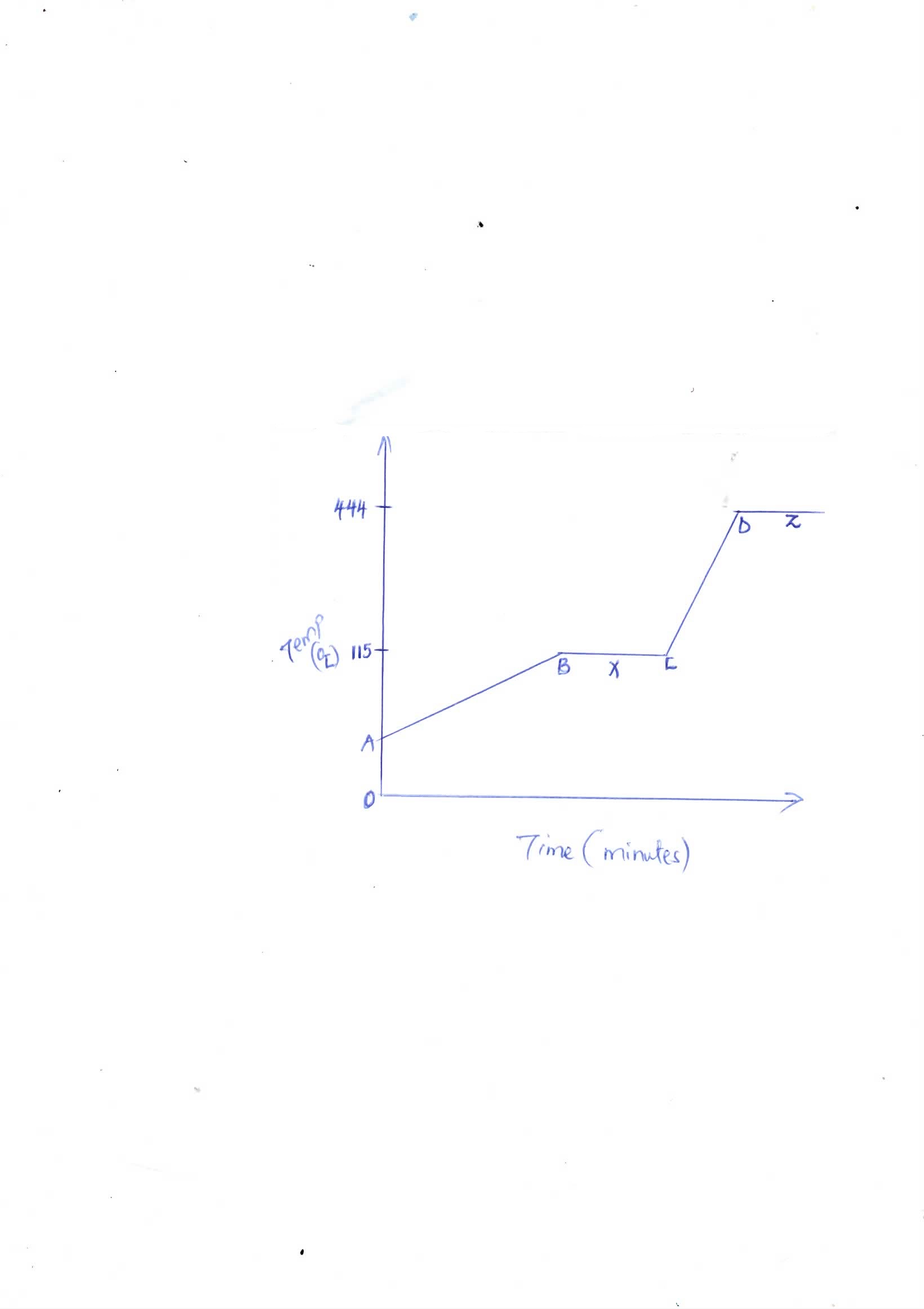
ii) State how the apparatus is suited for its function. (1 mk)

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2. Classify the following processes as either chemical or physical (3 mks)

|  |  |
| --- | --- |
| **Process** | **Type of change** |
| 1. Heating copper (II) sulphate |  |
| 1. Obtaining kerosene from crude oil |  |
| 1. Souring milk |  |

3. The diagram below shows a heating curve of a pure substance. Study it answer the questions that follow.



a) What physical changes are taking place at points X and Z? (2 mks)

X: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Z: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) Explain what happens to the melting point if sodium chloride was added to this substance. (2 mks)

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4. The following data gives the PH values of solutions A,B C and D. Use it to answer the questions that follow.

|  |  |
| --- | --- |
| Solution | PH -Value |
| A | 2.0 |
| B | 7.0 |
| C | 14.0 |
| D | 6.5 |

a) Which solution would quickly produce carbon (IV) oxide when reacted with sodium hydrogen carbonate? (1 mk)

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b) With reasons, state which solution is likely to be from rain water? (1 mk)

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c) State the colour of phenolphthalein in solution C. (1 mk)

………………………………………………………………………………………………………..

d) Name the general products formed when sodium hydroxide solution is reacted with solution A.

(1 mk)

……………………………………………………………………………………………………..

5. Dilute sulphuric (VI) acid was added to a compound of Zinc, compound P. The solid reacted with the acid to form a colourless solution Q and a colourless gas R which formed a white precipitate when bubbled through lime water.

a) Name:

i) Compound P: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1 mk)

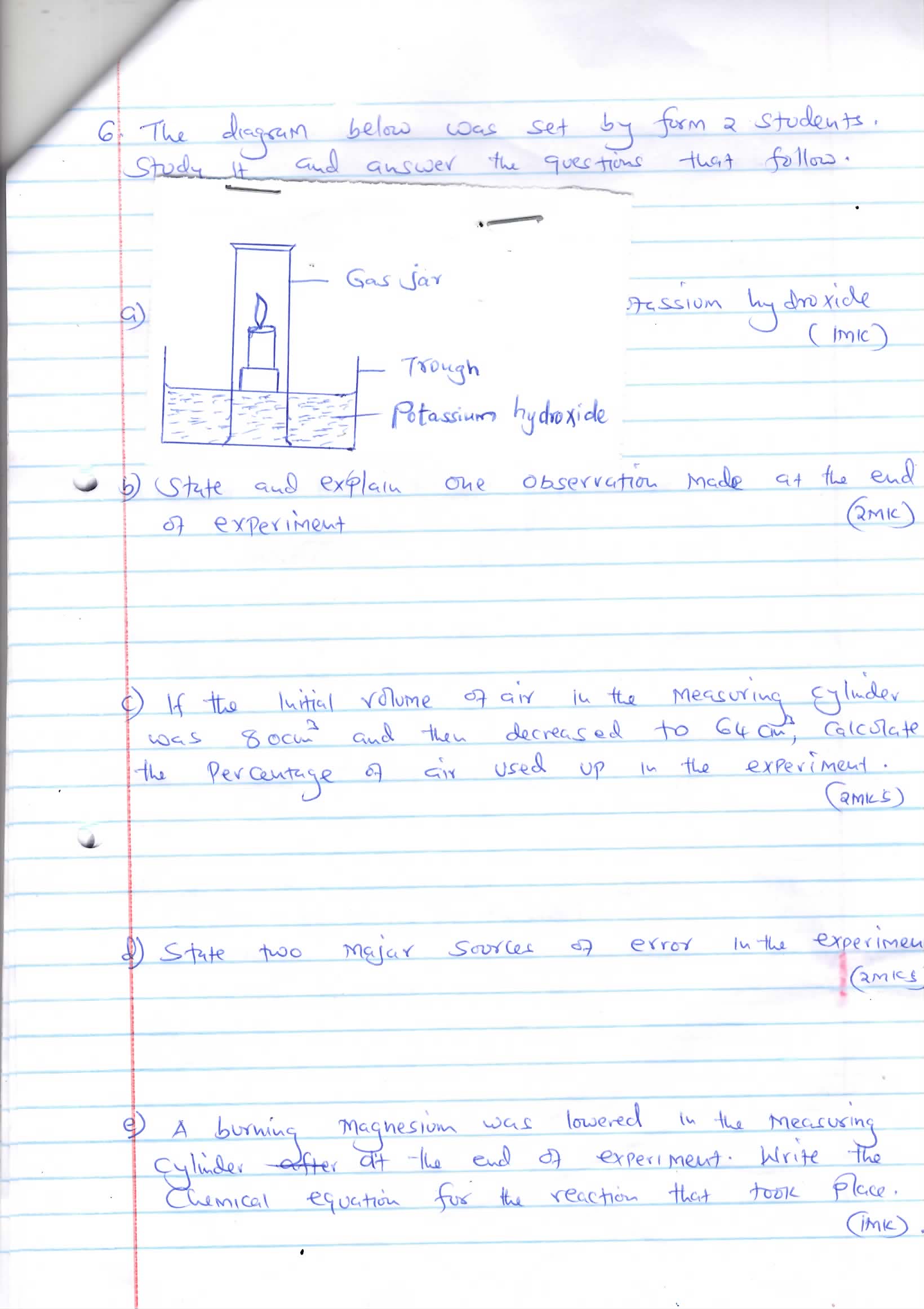
ii) Solution Q: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1 mk)

iii) Colourless gas R: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1 mk)

b) Write a balanced chemical equation for the reaction that took place when compound P named above recited with dilute sulphuric (VI) acid. (1 mk)

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6 The diagram below was set by form 2 students. Study it and answer the questions that follow.



a) What was the importance of potassium hydroxide solution used in the set up. (1 mk)

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b) State and explain one observation made at the end of experiment. (2 mks)

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c) If the initial volume of air in the measuring cylinder was 80 cm3 and then decreased to 64 cm3, calculate the percentage of air used up in the experiment. (2 mks)

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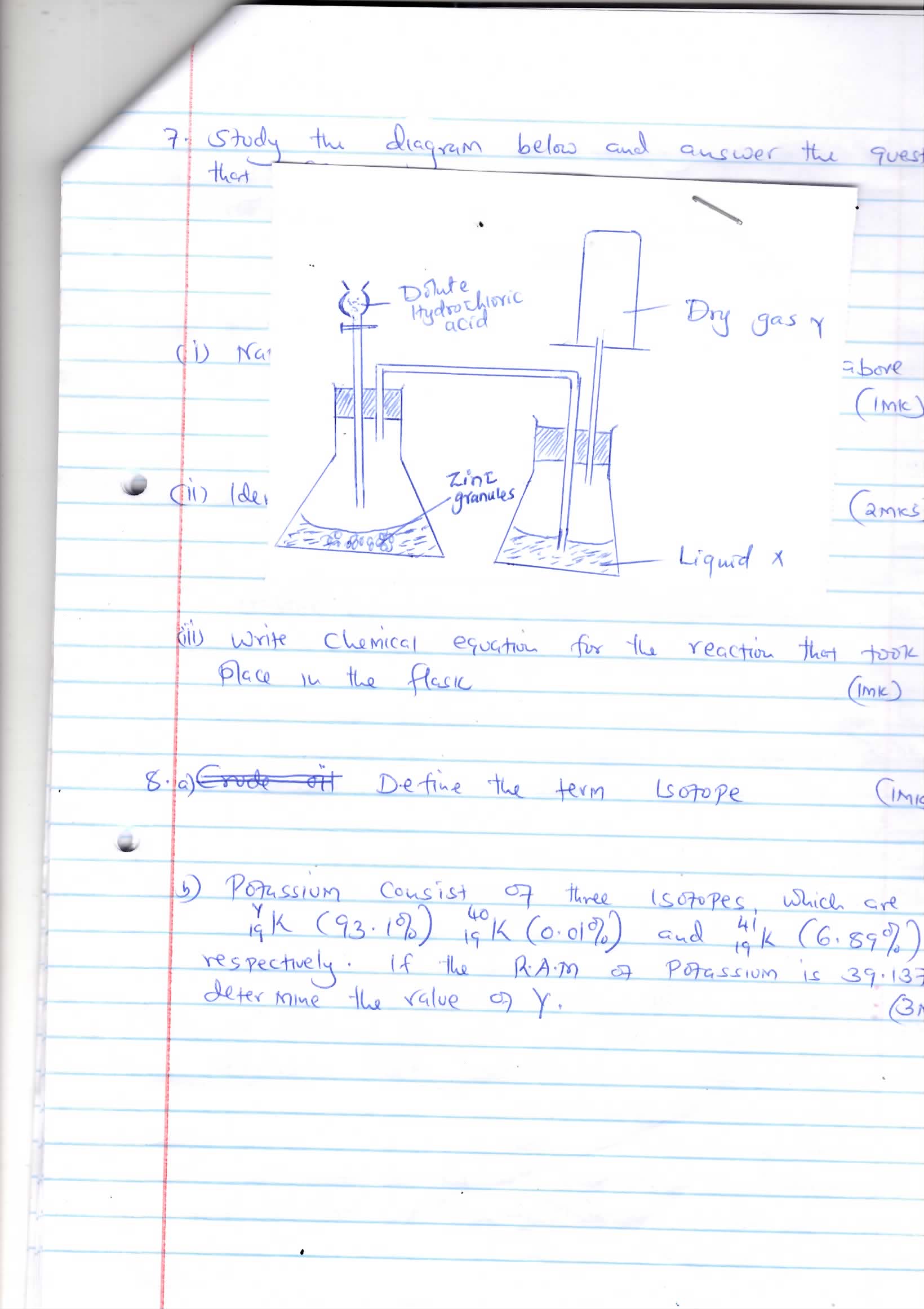
d) State two major sources of error in the experiment. (2 mks)

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e) A burning magnesium was lowered in the measuring cylinder at the end of experiment. Write the chemical equation for the reaction that took place. (1 mk)

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7. Study the diagram below and answer the questions that follow.



i) Name the method of gas collection used above. (1 mk)

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ii) Identify liquid X and give its purpose. (2 mks)

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iii) Write chemical equation for the reaction that took place in the flask. (1 mk)

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8. Define the term Isotope. (1 mk)

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b) Potassium consist of three isotopes, which are (93.1%) (0.01%) and respectively. If the R.A.M of potassium is 39.1379 determine the value of Y. (3 mks)

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9. The grid below represents part of a periodic table.

Study it and answer the questions that follow. (The letters do not represent the actual symbols of the element)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  | A |
|  |  |  |  | B |  |  |  |  |
|  | C |  | D |  |  | E |  |  |
|  | F |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

i) Which name is given to the group of element to which C and F belong? (1 mk)

……………………………………………………………………………………………………….

ii) Which letter represent the element that is least reactive? (1 mk)

…………………………………………………………………………………………………….

iii) Name the type of bond formed when B and E react. (1 mk)

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iv) Write the formula of the compound formed when D and oxygen react. (1 mk)

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v) On the grid, indicate with a tick(√) the position of element G which is in the 3rd period of the periodic table and form an ion G3- (1 mk)

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vi) Suggest the likely PH value of an aqueous solution of chloride of D. Explain. (2 mks)

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vii) Compare the atomic radius of element D and E. (2 mks)

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10. Study the information given in the table below and answer the questions that follow. The letters do not represent the actual symbols of the elements.

|  |  |  |
| --- | --- | --- |
| **Element** | **Atomic Number** | **Boiling Point (℃)** |
| P | 11 | 890 |
| Q | 13 | 2470 |
| R | 8 | -183 |
| S | 10 | -246 |
| T | 16 | 119 |

a) With reasons, state the elements which belong to;

i) same group (2 mks)

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

ii) period 2 (2 mks)

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b) Which element (s)

i) exist in gaseous state at room temperature and pressure. Explain (Room temperature = 25℃)

(2 mks)

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ii) does not form a chloride? Explain. (2 mks)

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c) Write the;

i) formular for the sulphate of Q. (1 mk)

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ii) Equation for the reaction between element A and C. (1 mk)

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d) Use dots(.) and crosss (x) to show the type of bond that exist between element A and E. (2 mks)

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11. Starting with solid lead (II) oxide, describe how a dry pure sample of lead (II) sulphate can be prepared in the lab. (3 mks)

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12. Give the name of each of the processes described below which take place when salts are exposed to air for some time.

a) Anhydrous copper (II) sulphate becomes damp. (1 mk)

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b) Magnesium chloride forms an aqueous solution. (1 mk)

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13. Study the scheme below and answer the questions that follow.

Heat Cooling

Yellow residue

White solid

Solid T

Brown gas + Gas V

a)i) Name solid T and Gas V.

Solid T: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1 mk)

Gas V: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1 mk)

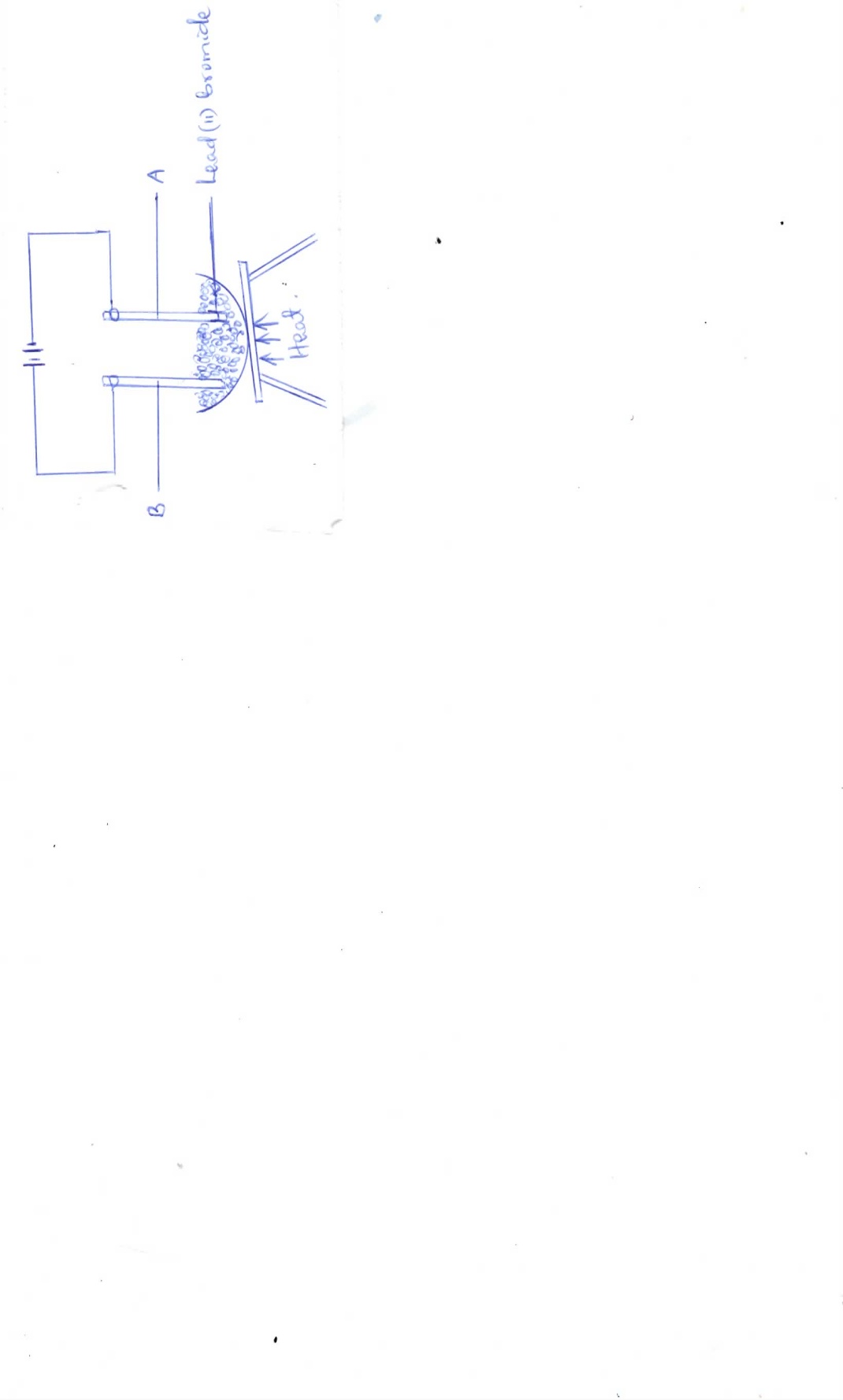
ii) Write the chemical equation for decomposition of solid T. (1 mk)

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14. Lead (II) oxide was contaminated with sodium carbonate. Describe how to obtain pure sample of lead (II) oxide from the mixture. (3 mks)

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15. Study the set-up below and answer the questions that follow.



i) Name electrode B. (1 mk)

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ii) Write an equation for the reaction at electrode A. (1 mk)

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iii) What precaution should be taken when performing this experiment? (1 mk)

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iv) State the observation made at electrode B. (1 mk)

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16. The simplified flow chart below shows some of the steps in the manufacture of sodium carbonate in the Solvay process.

Liquid L

Carbon (IV)

Ammonium chloride and sodium hydrogen carbonate

Ammonium chloride

`Brine Oxide

Step II

Step 1

Sodium hydrogen carbonate

Step III

Sodium carbonate

a) Identify substance L. (1 mk)

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b) Name the process taking place in step (II) (1 mk)

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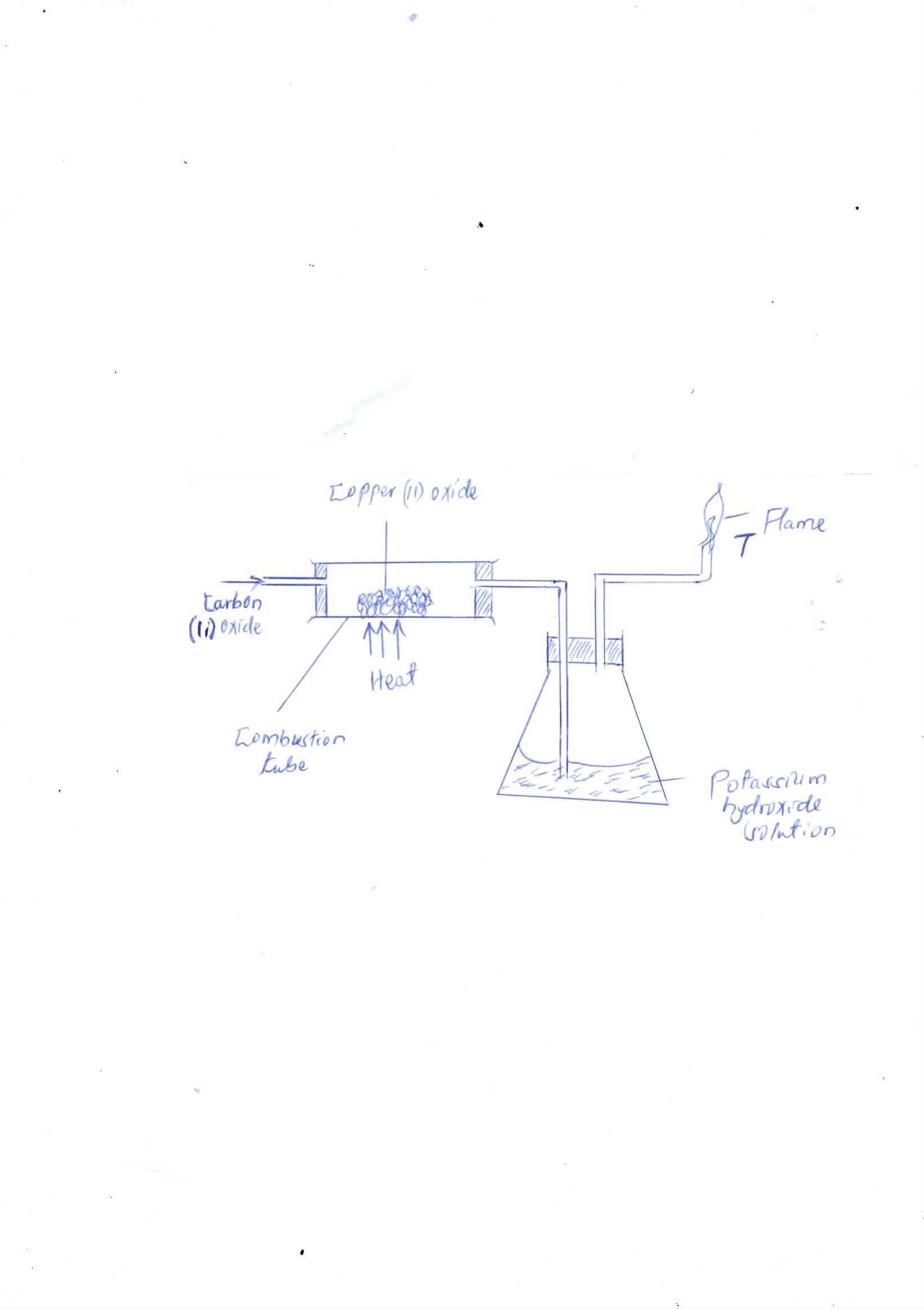
c) Write an equation for the reaction that takes place in step III. (1 mk)

………………………………………………………………………………………………………..

d) Name any by-product recycled in the process. (1 mk)

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17. Study the diagram below and answer the questions that follow.



a) State the observation made in the combustion tube. (1 mk)

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b) State the property of carbon (II) oxide demonstrated above. (1 mk)

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c) Name another gas that can be used in place of carbon (II) oxide and serve similar purpose.(1 mk)

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………………………………………………………………………………………………………

d) Why is the gas burnt at point T? (1 mk)

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