***CHEMISTRY***

***THEORY***

***PAPER 1***

***FORM III END OF TERM 1 2014***

Name: ………………………………..class: ………..Adm no: …………….school:……………………….

1. Name another gas which is used with oxygen in welding [1 Mk]
2. a. write the electronic configuration of calcium (atomic number 20) and magnesium (atomic number 12)

Calcium…………………………………………………………………………………………………………………….. [½ Mk]

Magnesium……………………………………………………………………………………………………………….. [½ Mk]

b. Why is calcium more reactive than magnesium? [2 Mks]

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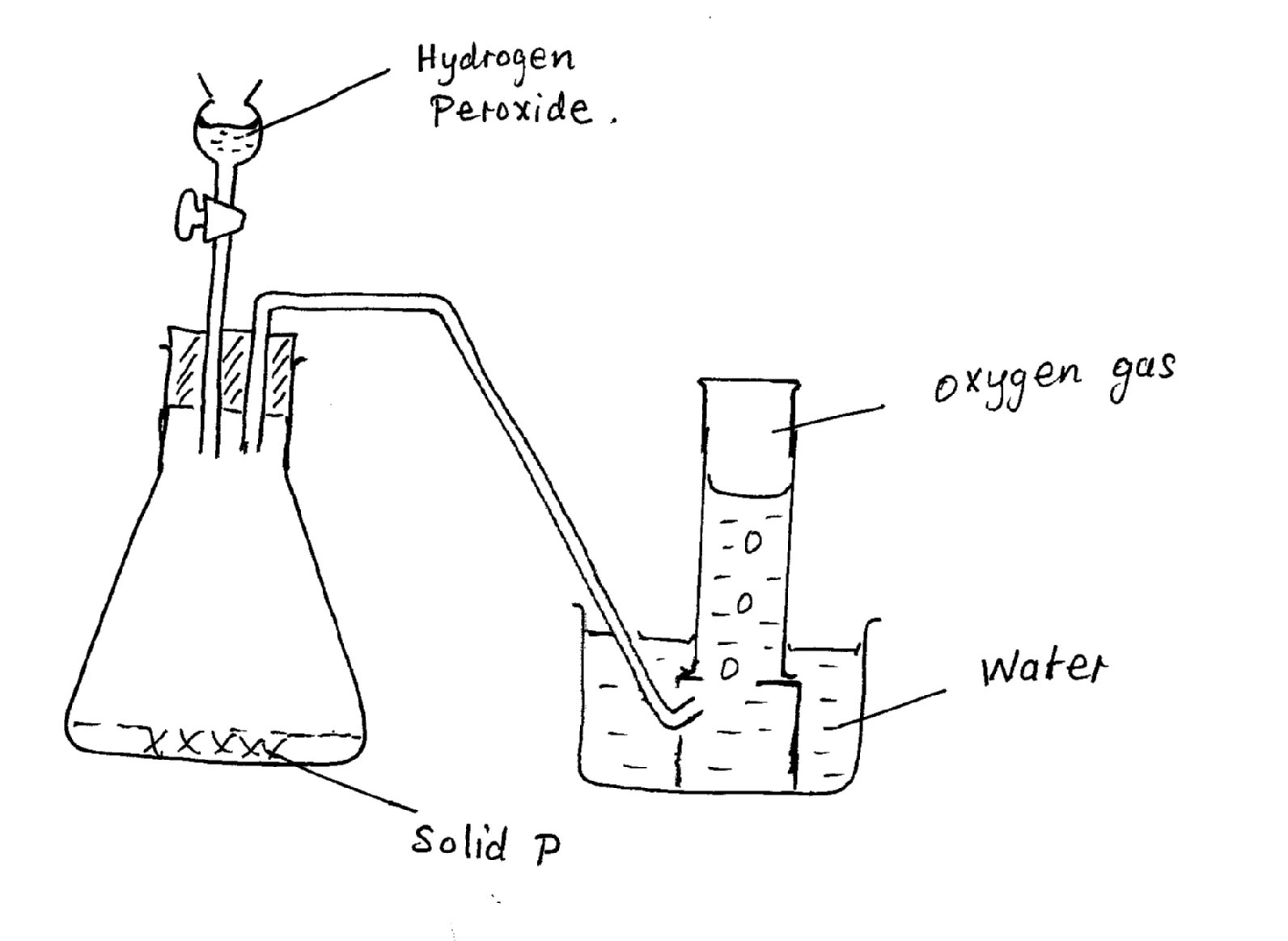
1. The table below shows the relative atomic masses and the percentage abundance of the isotopes T1 and T2 of element T

|  |  |  |
| --- | --- | --- |
|  | RAM | % abundance |
| T1 | 62.93 | 69.09 |
| T2 | 64.93 | 30.91 |

Calculate the relative atomic mass of element T [3 mks]

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1. The diagram below is a set-up for the laboratory preparation of oxygen gas.

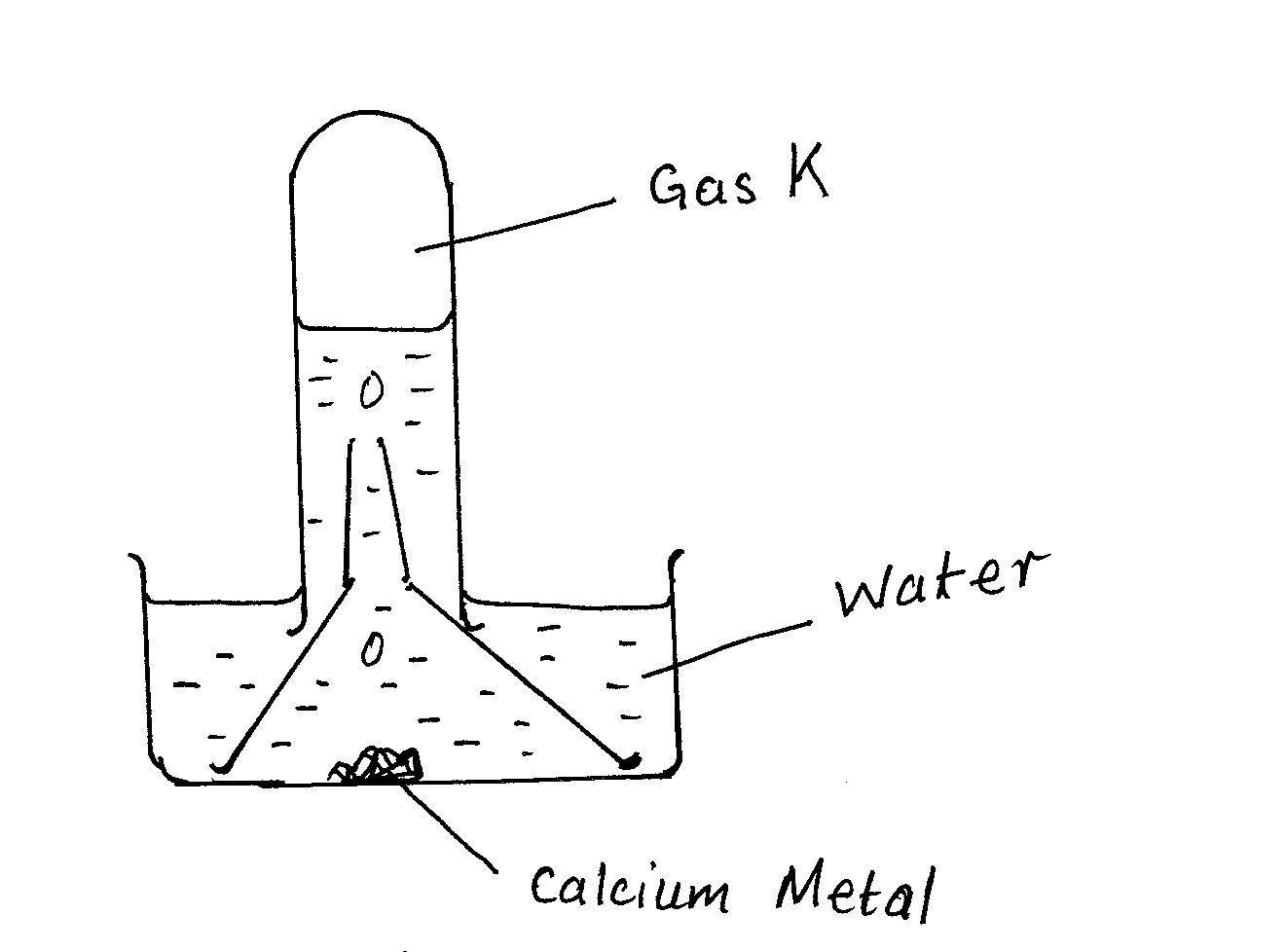


* 1. Name solid P. ………………………………………………………………………………………..…………………………………[1 mk]
  2. Write an equation for the reaction that takes place in the conical flask

………………………………………………………………………………………..…………………………………[1 mk]

* 1. Give two commercial uses of oxygen [2 mks]
     1. ………………………………………………………………………………………..……………………………………….
     2. ………………………………………………………………………………………..………………………………………

1. State two reasons why hydrogen is not commonly used as a fuel [2 mks]
   * 1. ………………………………………………………………………………………..………………………………………
     2. ………………………………………………………………………………………..………………………………………
2. The figure shows a set-up by a form three student to prepare a certain gas



* 1. Write an equation for the formation of gas K [1 mk]

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* 1. Give one use of gas K in the industries [1 mk]

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* 1. Give one use of the resulting solution after the metal has reacted [1 mk]

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1. Draw a dot and cross diagram showing the bonding in a molecule of calcium oxide. Name the type of bond. [3 mks]
2. When 0.288g of an oxide of metal M was reduced using suitable reducing agent, 0.256 of pure metal was formed. Determine the empirical formula of the oxide of the metal M. [M=64 O=16]

[4 mks]

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1. X+ is an ion with electronic configuration 2,8,8. Identify element X [1 mk] ……………………………………………………………………………………………………………………..………………………………
2. 20g of solid sodium hydroxide were dissolved in distilled water and made to 400cm3. 30 cm3 of this solution required 27 cm3 of dilute sulphuric (iv) acid for complete reaction. [Na=23 O=16 H=1]

Determine

* + 1. Moles of sodium hydroxide contained in 30 cm3 of solution [2 mks]

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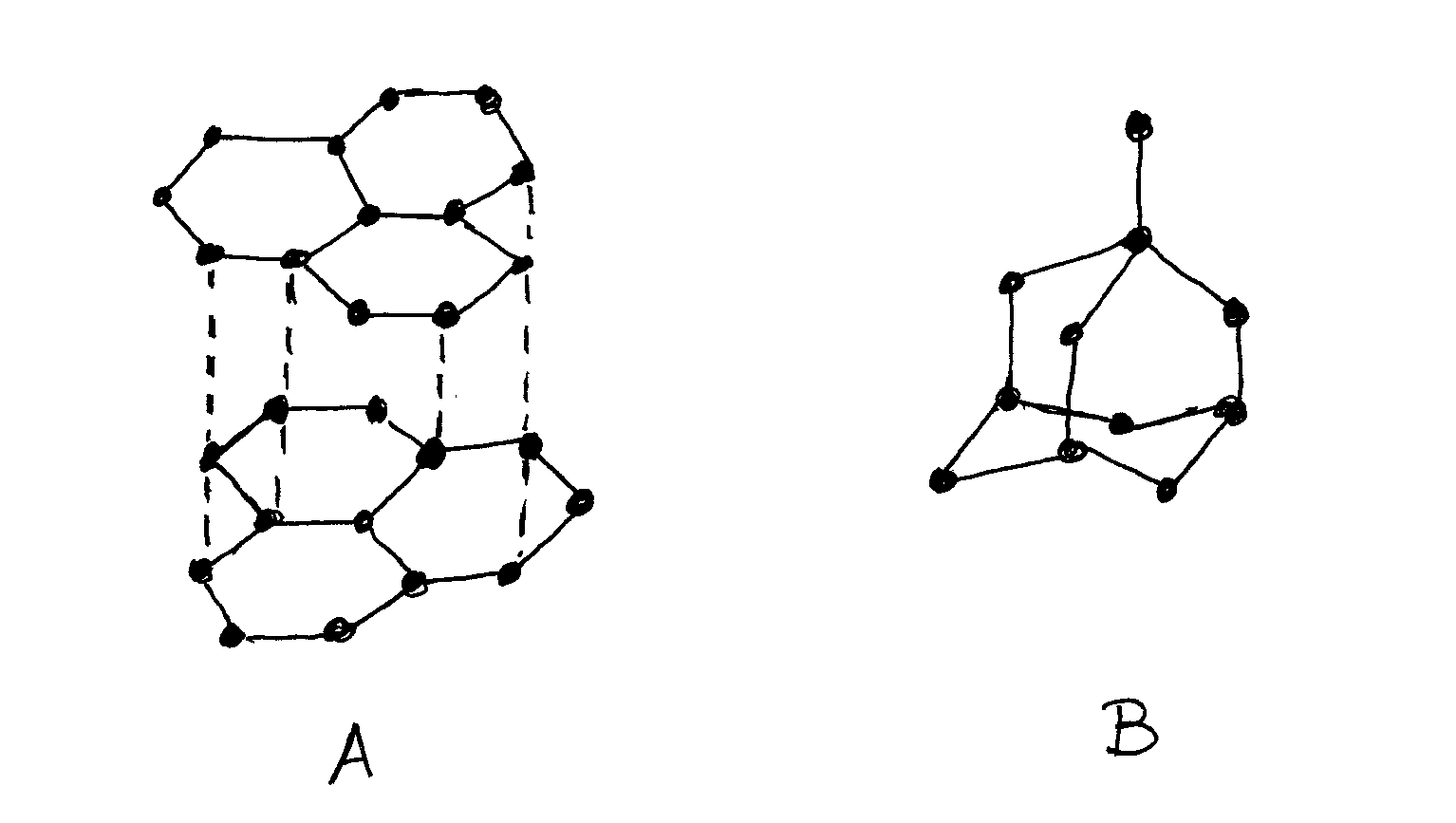
* + 1. Moles of sulphuric (iv) acid that reacted [2 mks]

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……………………………………………………………………………………………………………………..……………………………………Concentration of the sulphuric (iv) acid in moles per litre [2 mks]

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1. The diagram shows the structures of two allotropes of carbon. Study them and answer the questions that follow.



* 1. Name allotrope A and B [2 mks]

A…………………………………………………………………………………..

B……………………………………………………………………………………

* 1. Give two uses of allotrope B [2 mks]
     1. ……………………………………………………………………………
     2. ……………………………………………………………………………
  2. Which allotrope conducts electricity? Explain. [2 mks]

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1. An oxide of element F has the formulaF2O5
   1. Determine the oxidation state of F. [1 mk]

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* 1. In which group of the periodic table is element F? [1 mk]

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1. Explain how you would obtain solid sodium carbonate from a mixture of lead II carbonate and sodium carbonate. [3 mks]

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1. Give two properties of aluminum that makes it very suitable for making cooking utensils [2 mks]
   * 1. ……………………………………………………………………………………………………………………..………………………
     2. ……………………………………………………………………………………………………………………..………………………
2. Write down an ionic equation for the reaction between dilute hydrochloric acid and calcium carbonate [3 mks]

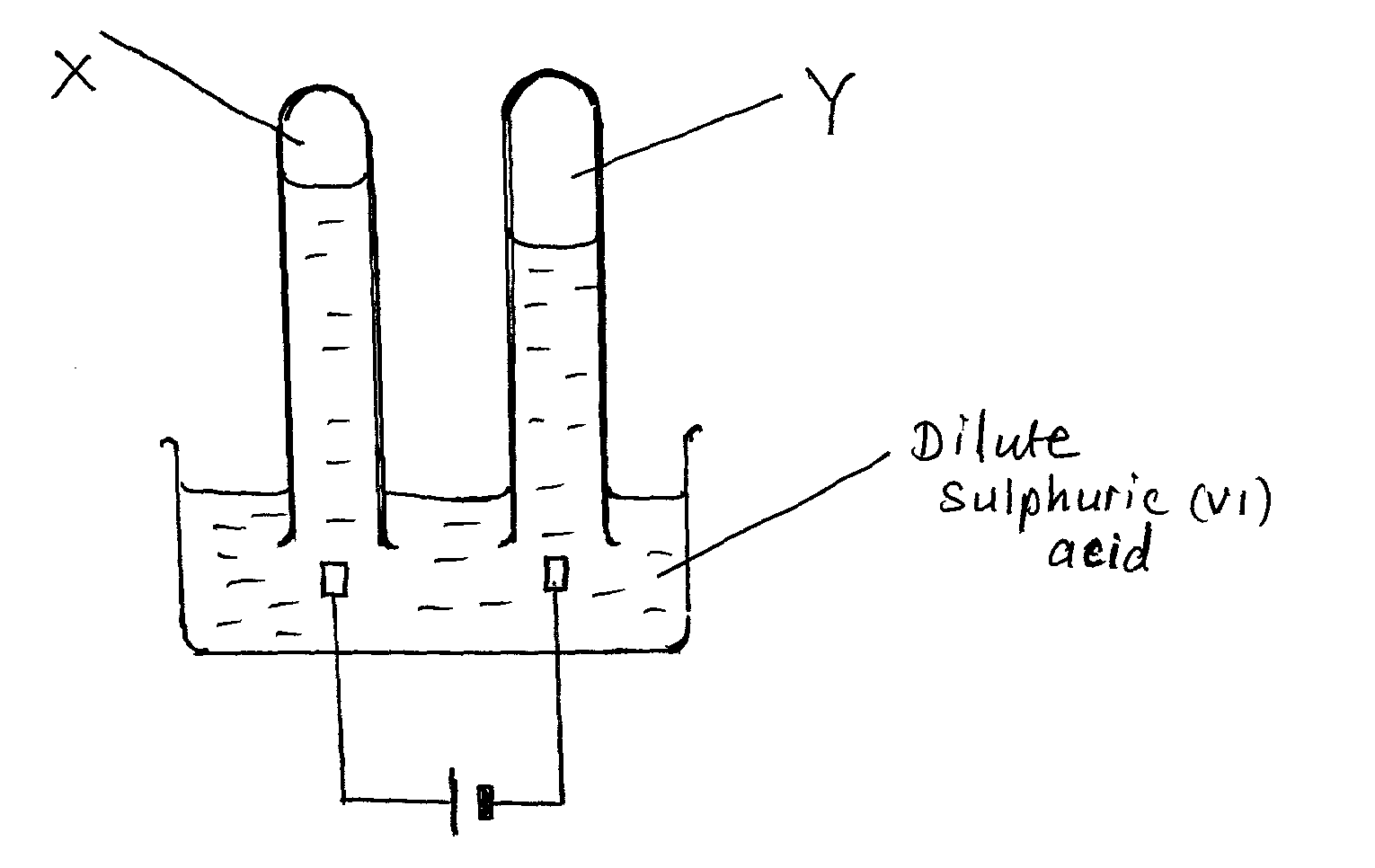
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1. The diagram shows electric current passing through dilute sulphuric (iv)acid



* 1. On the diagram identify the cathode and the anode [2 mks]
  2. Identify substances X and Y [2 mks]

X ……………………………………………………………………………………………………………………[1 mk]

Y …………………………………………………………………………………………………………………….[1 mk]

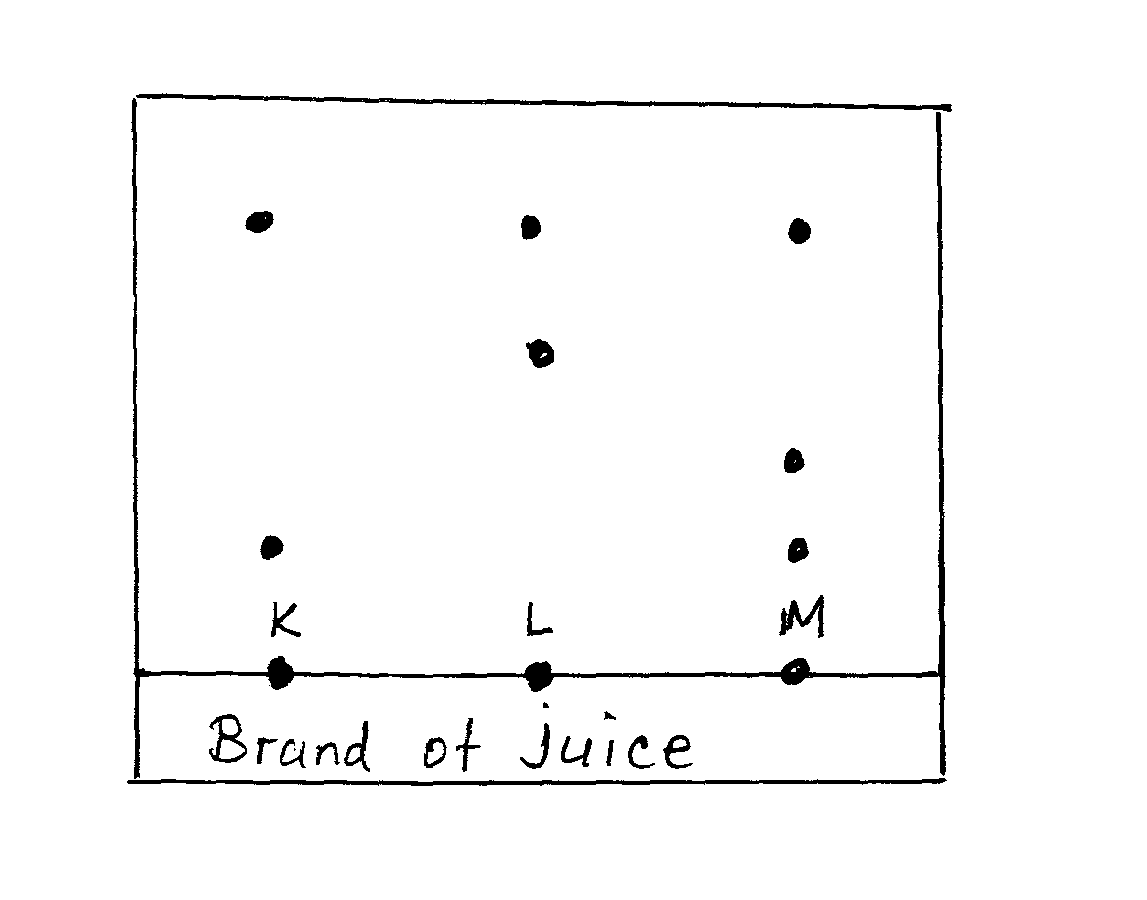
1. State and explain the change in mass that occur when following substances are separately heated in open crucibles [4 mks]
   1. Copper metal……………………………………………………………………………………..………………………………………..

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* 1. Copper II nitrate……………………………………………………………………………..………………………………………..

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1. The diagram below represents a paper chromatograph for three brands of juices suspected to contain banned food colourings



The result showed presence of banned food colourings in L and M only

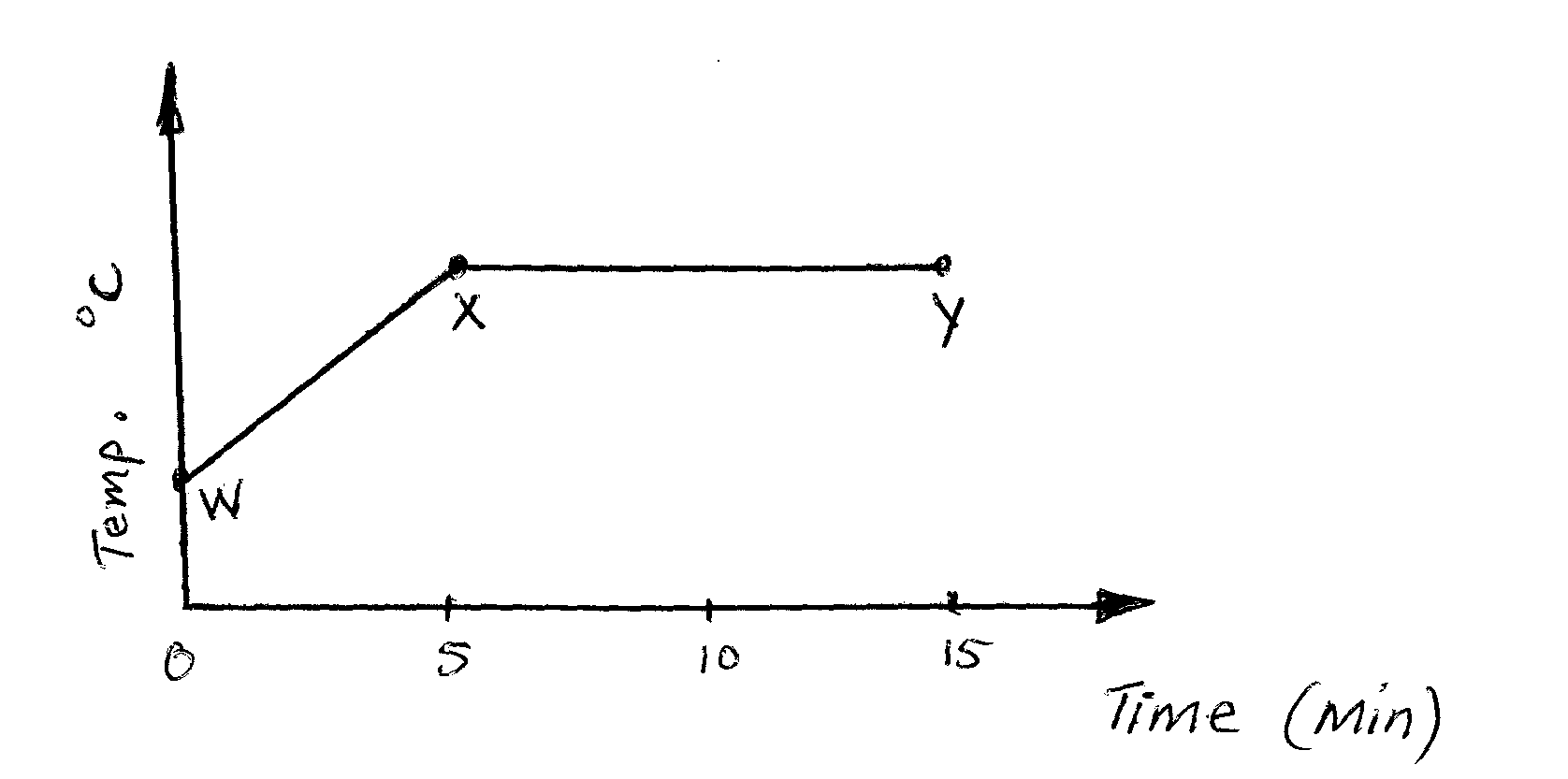
* 1. On the diagram
     1. Circle the spots which show the banned colourings [2 mks]
     2. Show the solvent front [1 mk]
  2. On the same diagram indicate and label the baseline [1 mk]

1. Determine the number of sodium ions contained in 25cm3 of 0.5M sodium carbonate solution

[a=6.023 x 1023] [3 mks]

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1. The graph below shows a curve obtained when water at 20 was heated for 15 mins.



* 1. What happens to the water molecules between points W and X [1 mk]

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* 1. In which part of the curve does a change of state occur? [1 mk]

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* 1. Explain why the temperature does not rise between points X and Y [1 mk]

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1. Write down the formula of the following compounds
   * 1. Potassium manganate vii…………………………………………………………………[1mk]
     2. Aluminium oxide …………………………………………………………………………….[1mk]
     3. Iron III chloride ……………………………………………………………………………….[1mk]
2. Write balanced equations for the following reactions
   1. Reaction between sodium and excess oxygen [1mk]

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* 1. [1mk]

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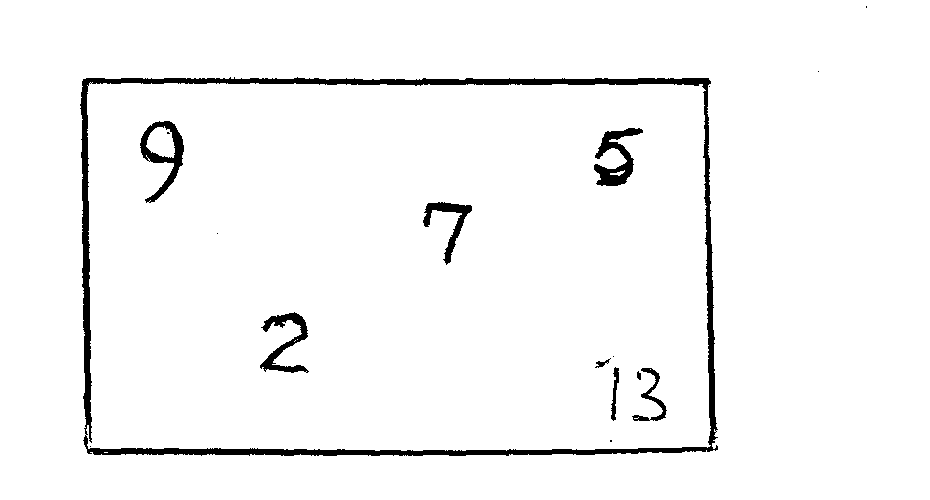
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1. Reaction between Zinc and hydrochloric acid [1mk]

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1. The diagram shows PH values for several substances.



Choose the likely PH value for,

* + 1. Dilute Hydrochloric acid…………………………………………………………………………………..[1mk]
    2. Calcium hydroxide…………………………………………………………………………………………..[1mk]
    3. Sodium hydroxide …………………………………………………………………………………………..[1mk]
    4. Lemon juice……………………………………………………………………………………………………..[1mk]

1. Briefly outline how you would obtain ethanol from a mixture of ethanol and water. [3mks]

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1. (a) What is rust? [1mkl]

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(b) Give two advantages of rusting.

(i) ………………………………………………………………………………………………………………………….[1mk]

(ii)………………………………………………………………………………………………………………………………[1mk]