

**AA-14**  
**FORM ONE CHEMISTRY**

1. Ethanol and Pentane are miscible liquids. Explain how water can be used to separate a mixture of ethanol and pentane.

(3mks)

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2. (i) Name the piece of apparatus shown below;



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ii) What is the use of the apparatus?

(1mk)

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3. The diagram below shows a diagram of a non-luminous flame. A piece of white paper is slipped into the region of the flame as shown in the diagram and quickly removed before it catches fire.

(a) Draw and label the piece of paper to show how it is affected by the above flame . (2mks)

(b) Explain why a luminous flame of a Bunsen burner produces bright yellow light. (2mks)

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4. The paper chromatogram below shows the identification of unknown metal ions in mixture **M**. The reference ions **X**, **Y**, and **Z** are also shown. The reference ions x, Y, and Z are also shown. The experiment was done in an ascending method.

**M          O          X          Y          Z**

**X**- vanadium (IV) ion ( $V^{4+}$ )

**Y** – chromium (III) ion ( $Cr^{3+}$ )

**Z** – copper (II) ion ( $Cu^{2+}$ )

(a) Name the ions present in the mixture **M**

(2mks)

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(b) Indicate the solvent front on the diagram

(1/2mk)

(c) Mixture Q contains all the three ions. Show the chromatography of Q (1 1/2mks)

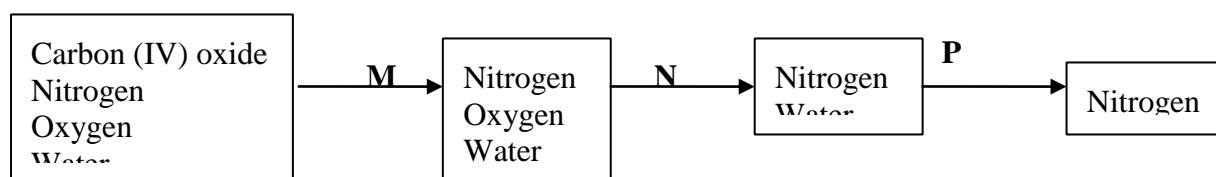
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5. Complete the table below by selecting appropriate pH for each substance from pH values

1.0, 4.0, 7.0 and 10.0

Substance	pH value
Sodium carbonate	
Lemon juice	

6. The flow chart below represents how nitrogen gas can be isolated from air in the lab



Explain how the following processes are carried out;

(i) Process

**M**.....  
.....  
.....  
..... (1mk)

(ii) Process

**N**.....  
.....(1mk)

(iii) Process **P**

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.....(1mk)

7. When hydrogen gas is passed over heated Lead (II) oxide in a combustion tube, Lead (II) oxide is reduced.

(a) Write a word equation from the above reaction

(1mk)

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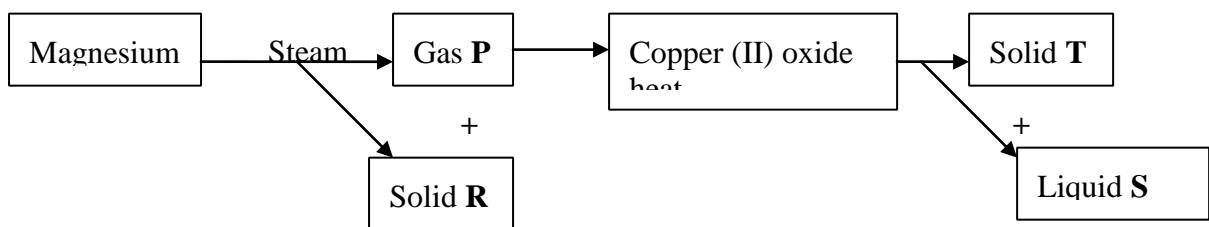
(b) What observations are made in the combustion tube when the reaction was complete (2mks)

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(c) Name another gas which can be used to reduce Lead (II) oxide (1mk)

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8. Use the chart below to answer the questions that follow;



Identify; (4mks)

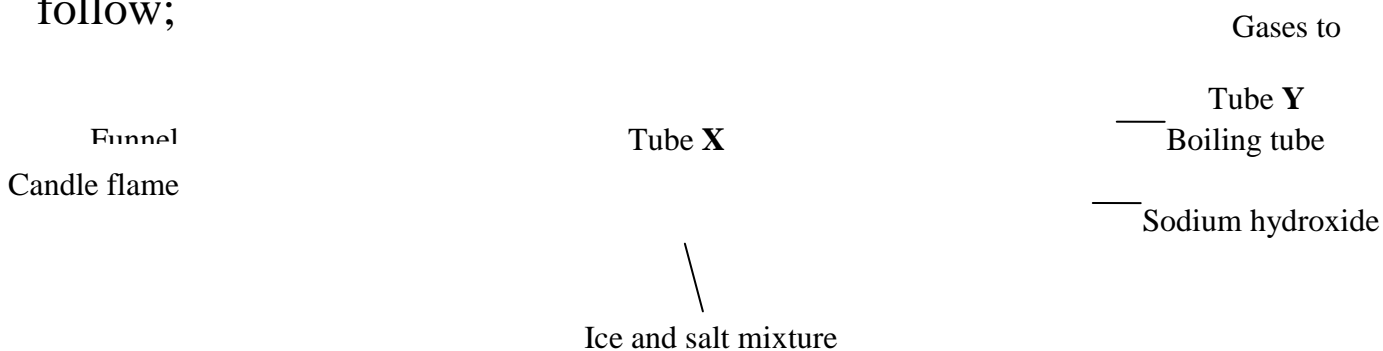
(i) gas **P**..... (iii) Solid **T**.....  
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(ii) solid **R**..... (iv) Liquid **S**.....  
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9. (a) A candle wax is mainly a compound consisting of **two** elements. Name the two elements.(2mks)

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(b) Study the set-up below and use it to answer the questions that follow;



(i) State the observations made in tube **X** and boiling tube  
(2mks)

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(ii) Name two gases that come out tough tube **Y**  
(2mks)

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(iii) Give a word equation for the burning of the candle

(1mks)

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(iv) What is the role of the sucking pump?

(1mk)

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10. List **four** differences between luminous and non-luminous flames.

(4mks)

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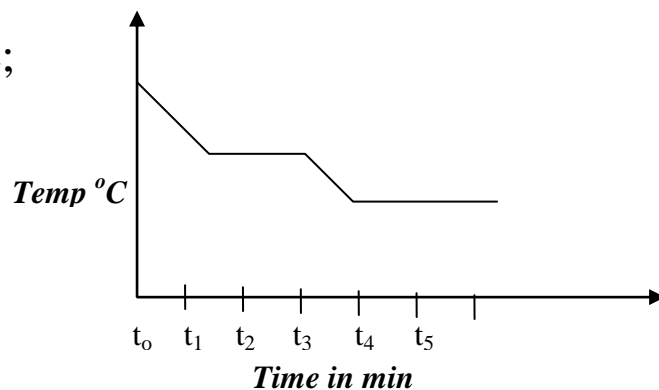
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11. The graph below is a cooling curve of a substance from gaseous state to solid state;





Name;

(a) The process taking place between  $t_0$  and  $t_1$

(1mk)

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(b) The energy change that occurs between  $t_3$  and  $t_5$

(1mk)

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12. The pH values of some solutions are given below;

Substance	pH
<b>P</b>	9.0
<b>Q</b>	2.2
<b>R</b>	13.5
<b>S</b>	4.8

(a) Which substance is likely to be;

(i) Nitric (V) acid

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(1mk)

(ii) Tooth paste

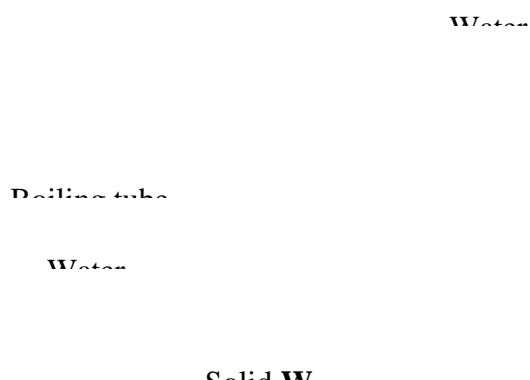
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..(1mk)

(b) Solution **R** is put in a beaker. Litmus solution is added, and then substance **Q** is added

a little at a time until no further change is noted. Outline the observations made (2mks)

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13. (a) The diagram below shows, set-up by a student in an attempt to prepare and collect dry gas;



i) Complete the diagram to show how dry oxygen can be collected (3mks)

(ii) Identify solid W

.....(1m

k)

(ii) Write a word equation for the reaction taking place.

(2mkS)

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(b) A piece of phosphorous was burnt in excess air and the product obtained was solution

with small amount of hot water to make a solution;

(i) Write a word equation for the burning of phosphorous in excess air. (2mks)

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(ii) The solution obtained in (b) above was found to have a pH of

2. Explain (3mks)

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(c) State **four** uses of oxygen

(4mks)

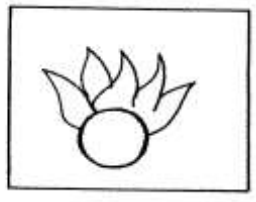
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(d) Give **two** physical properties of oxygen

(2mks)

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14. (a)  
mean?



What does the safety symbol below

(2mks)

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(b) Give **two** advantages of carrying out experiments in apparatus made of glass. (2mks)

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15. If you are given two samples of water one of which is pure and another which is impure,

give **one** simple experiment that you would carry out in the laboratory to distinguish them.

What results would you expect?

(3mks)

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17. (a) Write down the word equation for the reaction between calcium hydroxide and sulphuric acid

(1mk)

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(b) What is the general term used for the type of reaction you wrote in (a) above? (1mk)

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(c) Of what importance would this reaction be to farmers in areas that have been polluted? with acid rain?

(2mks)

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18. Metal **S** removes oxygen combined with **P**. **Q** reacts with an oxide **R** but not with an oxide

of **P**. **P** reacts with cold water but **R** does not;

(a) Which is the most reactive metal?

(1mk)

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(b) Which is the least reactive metal?

(1mk)

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(c) Arrange the metals in order of reactivity starting with the most reactive to the least

reactive

(1mk)

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19. Nekesa found a colourless liquid which she suspected to be water. On adding a few drops of the liquid to anhydrous (II) sulphate powder, the colour of the latter changed from white to blue. On boiling the liquid, she found it to boil at a range of 102-107°C.



(i) What is the boiling point of pure water at sea level?

(1mk)

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(ii) Write a word equation to show the change that occurs when water is added to anhydrous

Copper (II) sulphate.

(1mk)

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(iii) Why does the liquid boil over a range of temperature?

(2mks)

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20. Copper (II) oxide + Hydrogen      Copper + Water

(a) Using arrows show where reduction and oxidation have taken place in the above equation.(2mks)

(b) Name ;(i) the reducing agent

..... (1mk)

(ii) the oxidized species

.....(1mk)

21. In temperate countries, salt is sprayed on roads to defrost and clear roads but the long term effect of this practice is costly to motorists.

(a) Explain the role of salt in defrosting the ice

(2mks)

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(b) Explain why the long term effect is costly to motorists

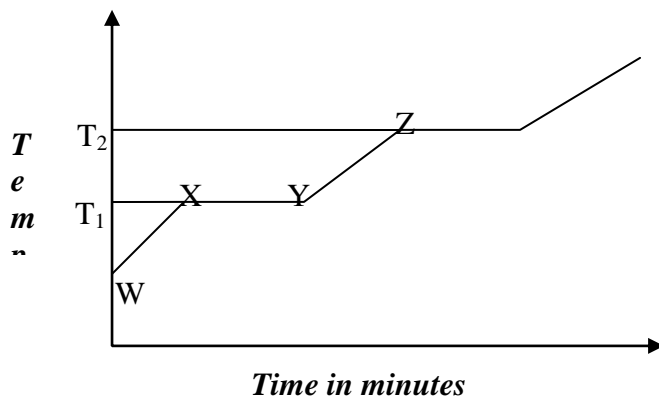
(2mks)

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22. The graph below shows the changes which take place when a solid is heated;



(a) What happens to the molecules between **W** and **X**?

(2mks)

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(b) What is the significance of temperatures **T<sub>1</sub>** and **T<sub>2</sub>**?

(2mks)

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(c) Explain why the temperature does not rise between **X** and **Y**.

(2mks)

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(d) Is the substance represented pure or impure? Give a reason.

(2mks)

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23. Name **two** methods used to separate mixtures.

(1mk)

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24. Define the term **drug**.

(1mk)

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25. Identify the piece of apparatus below;

(1mk)



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