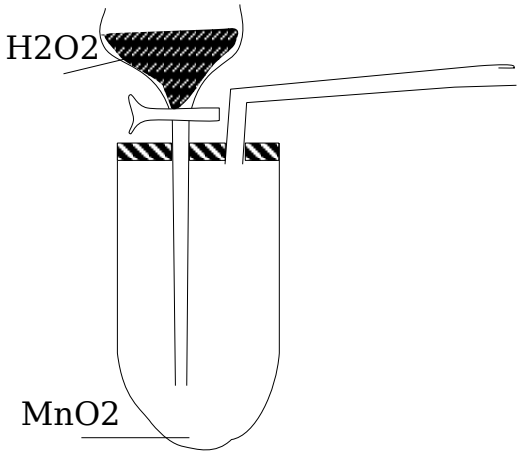
KAIRI BOYS SECONDARY SCHOOL
FORM ONE CHEMISTRY
DECEMBER HOLIDAY ASSIGNMENT
Air and combustion

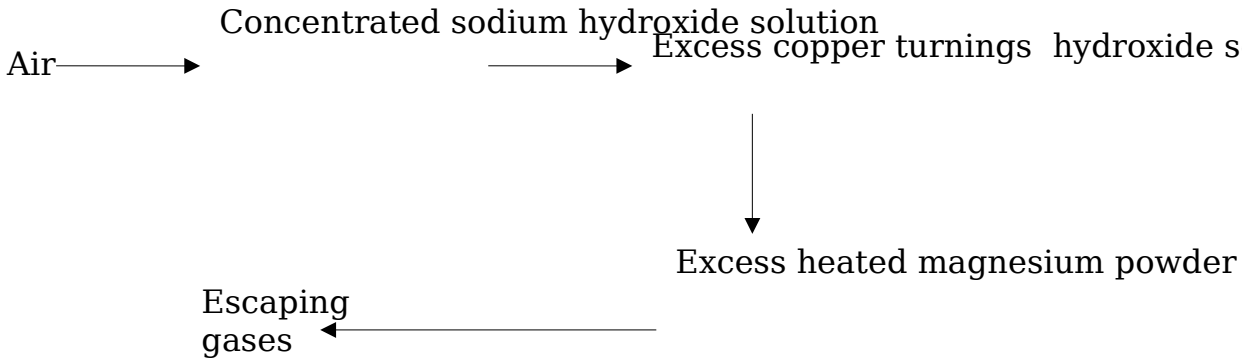
1. The set-up below was used to prepare a sample of oxygen gas. Study it and answer
the questions that follow.



(i) Complete the diagram to show how Oxygen can be collected

(ii) Write a chemical equation of the reaction to produce oxygen

2. Air was passed through several reagents as shown below:



(a) Write an equation for the reaction which takes place in the chamber containing

Magnesium powder

(b) Name **one** gas which escapes from the chamber containing magnesium powder.

Give a reason for your answer

3. (a) What is rust?
(b) Give **two** methods that can be used to prevent rusting

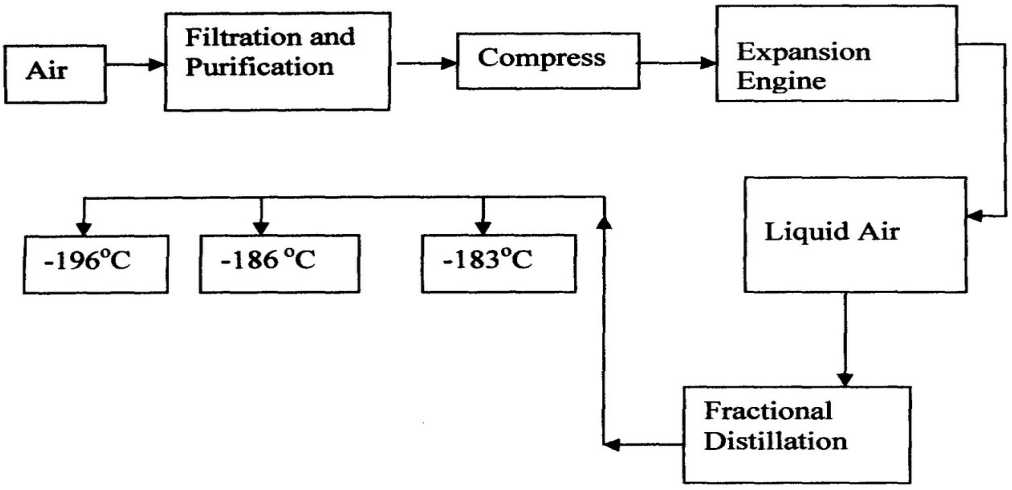
(c) Name **one** substance which speeds up the rusting process

4. 3.0g of clean magnesium ribbon 8.0g of clean copper metal were burnt separately in
equal volume of air and both metals reacted completely with air;
a) State and explain where there was greater change in volume of air

Mg =24 Cu = 64

b) Write an equation for the reaction between dilute sulphuric acid and product of burnt copper

5. Oxygen is obtained on large scale by the fractional distillation of air as shown on the flow
chartbellow.

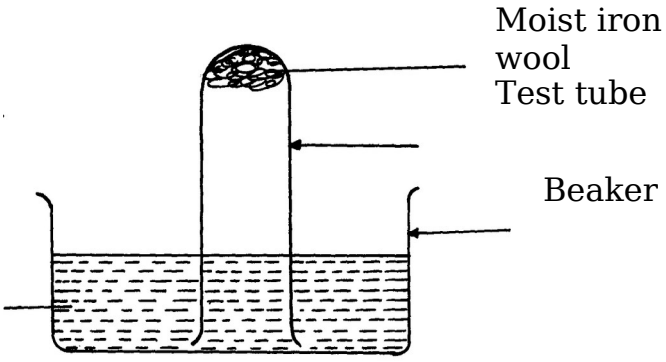


a) Identify the substance that is removed at the filtration stage

b) Explain why Carbon (IV) oxide and water are removed before liquefaction of air

c) Identify the component that is collected at -186°C

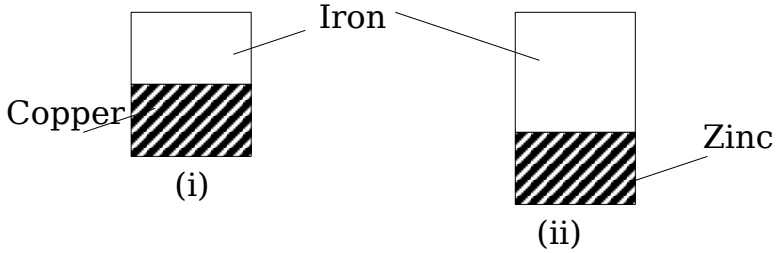
6. The set-up below was used to study some properties of air.



Water

State and explain **two** observations that would be made at the end of the experiment

7. A form two student in an attempt to stop rusting put copper and Zinc in contact with iron as shown:-



(a) State whether rusting occurred after one week if the set-ups were left out

(b) Explain your answer in **(a)** above

8. In an experiment, a piece of magnesium ribbon was cleaned with steel wool. 2.4g of the clean magnesium ribbon was placed in a crucible and completely burnt in oxygen.

After cooling the product weighed 4.0g

a) Explain why it is necessary to clean magnesium ribbon

b) What observation was made in the crucible after burning magnesium ribbon?

c) Why was there an increase in mass?

d) Write an equation for the major chemical reaction which took place in the crucible

e) The product in the crucible was shaken with water and filtered. State and explain the observation which was made when red and blue litmus paper were dropped into the filtrate

9. In an experiment, a piece of magnesium ribbon was cleaned with steel wool. 2.4g of the clean magnesium ribbon was placed in a crucible and completely burnt in oxygen. After cooling the product weighed 4.0g

a) Explain why it is necessary to clean magnesium ribbon

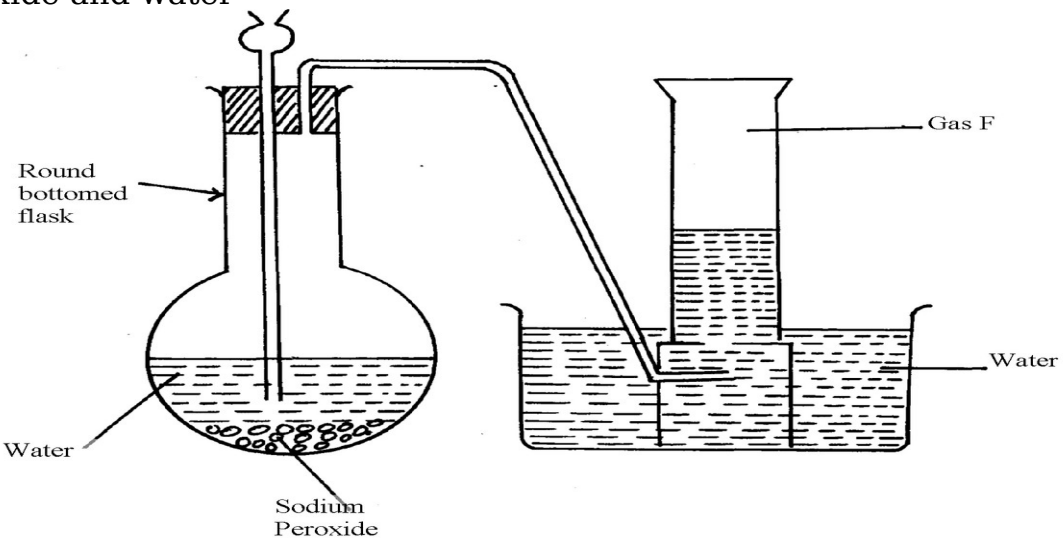
b) What observation was made in the crucible after burning magnesium ribbon?

c) Why was there an increase in mass?

d) Write an equation for the major chemical reaction which took place in the crucible

e) The product in the crucible was shaken with water and filtered. State and explain the observation which was made when red and blue litmus paper were dropped into the filtrate

10. The set-up below was used to collect gas **F** produced by the reaction between sodium peroxide and water



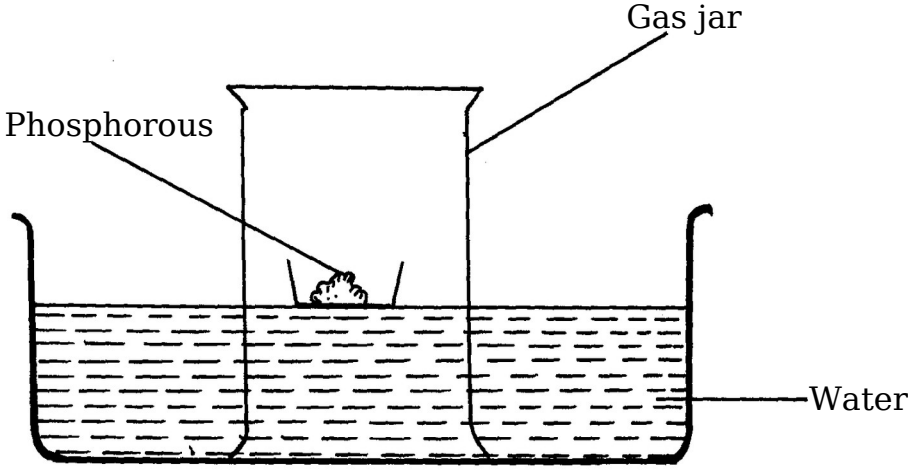
(i) Name gas **F**.....

(ii) At the end of the experiment, the solution in the round bottomed flask was found to be a strong base. Explain why this was so

(iii) Which property of gas **F** makes it be collected by the method used in the set-up?

(iv) Give **one** industrial use of gas **F**

11 . The set-up below was used to investigate properties of the components of air:



(i) State **two** observations made during the experiment

(ii) Write **two** chemical equations for the reactions which occurred

(iii) The experiment was repeated using burning magnesium in place of phosphorous.
There was greater rise of water than in the first case. Explain this observation

(iv) After the two experiments, the water in each trough was tested using blue and red litmus
papers. State and explain the observations of each case.
(a) Phosphorous experiment

b) Magnesium experiment

(v) Briefly explain how a sample of nitrogen gas can be isolated from air in the laboratory

12. (a) A group of students burnt a piece of Mg ribbon in air and its ash collected in a Petri dish.
The ash was found to comprise of magnesium Oxide and Magnesium nitride
(i) Write an equation for the reaction leading to formation of the magnesium nitride
(ii) A little water was added to the products in the Petri dish. State and explain the
observation made.
(iii) A piece of blue litmus paper was dipped into the solution formed in (b) above.
State the observation made.

EQUATIONS

1. COMPLETE THE FOLLOWING WORD EQUATIONS
2. WRITE WELL BALANCED CHEMICAL EQUATIONS OF THE SAME

A) Sodium + hydrochloric acid

B) Lithium + sulphuric acid

C) Magnesium hydroxide + nitric acid

D) Barium oxide + hydrochloric acid

E) Copper carbonate + sulphuric acid

F) Potassium hydrogen carbonate + nitric acid