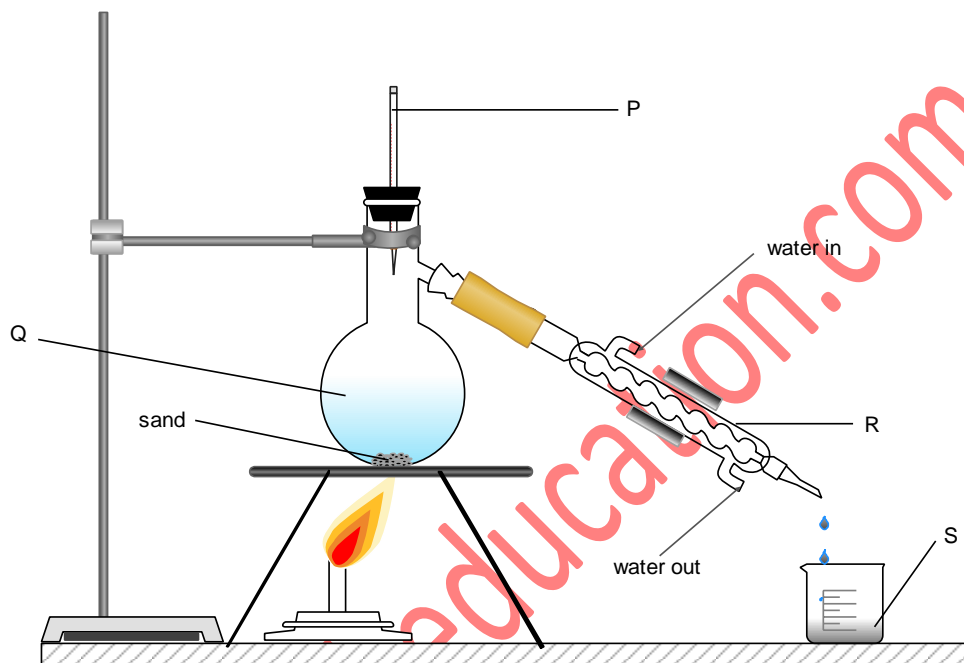
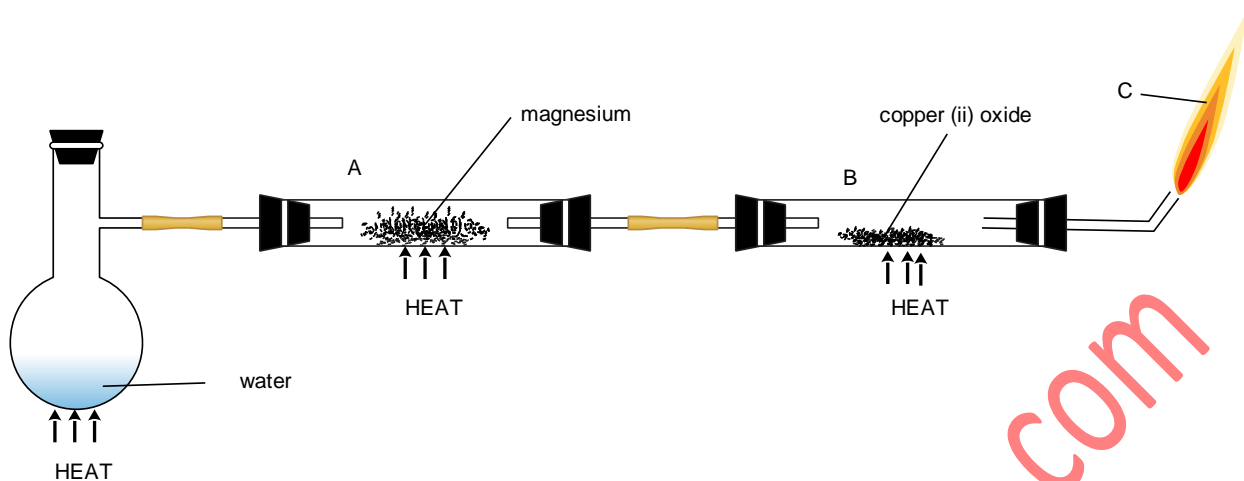


1. Use the apparatus set-up below to answer the questions that follow.

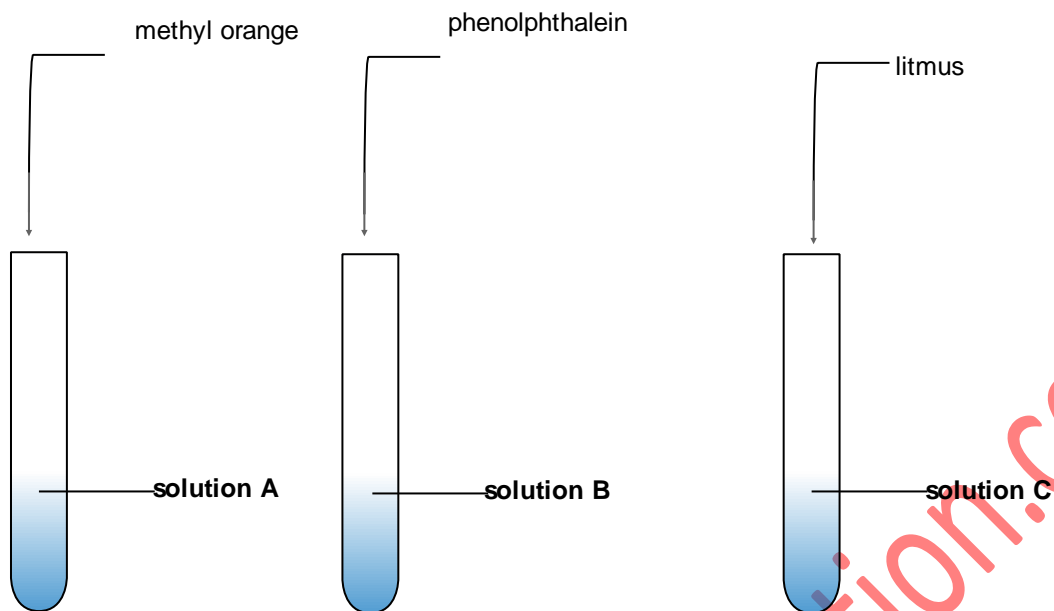


- a. Label the parts labeled in letters (4marks)
- b. Explain why the set-up is not appropriate for separation of a mixture of ethanol and water. (2marks)
- c. What is the use of sand in the experiment? (2marks)
- d. Point out one mistake in the arrangement of the apparatus. (1mark)
2. The diagram below shows an experiment to investigate chemical property of two substances.



- Write chemical equations for the reactions which take place in A, B, and C. (3marks)
- Explain why heating is first done on water before magnesium and copper (ii) oxide are heated. (2marks)
- Give two metals which cannot be placed at A in this experiment. (2marks)
- State two observations made in A and B after the experiment. (4marks)

3. Three different indicators are put in solutions A, B and C as shown below.



The results obtained are as follows.

indicator	Colour in the solution
Methyl orange	orange
phenolphthalein	pink
litmus	red

- i. State the observations made when each of the above solutions are put in sodium carbonate. (3marks)

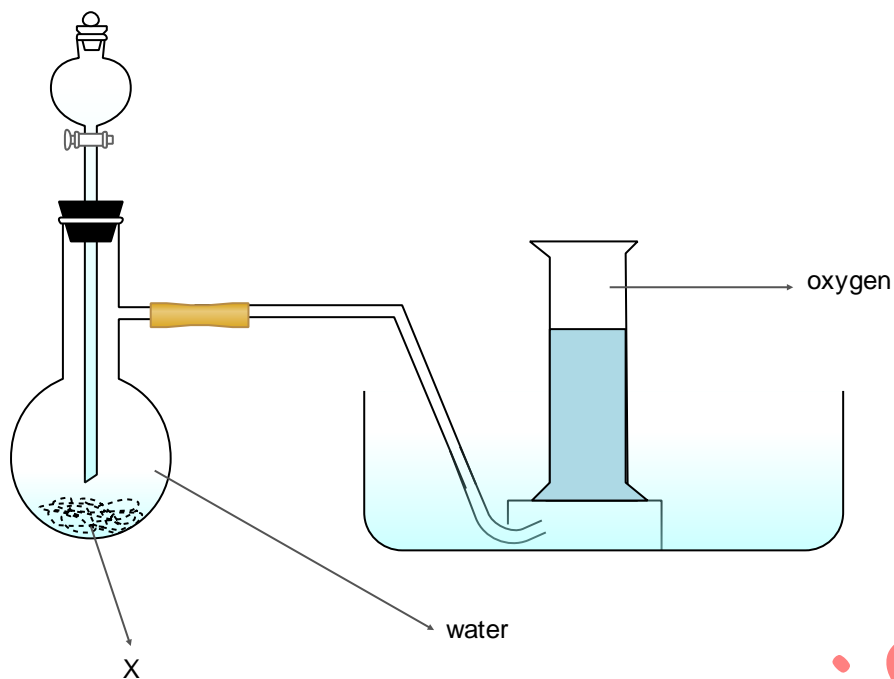
A

B

C

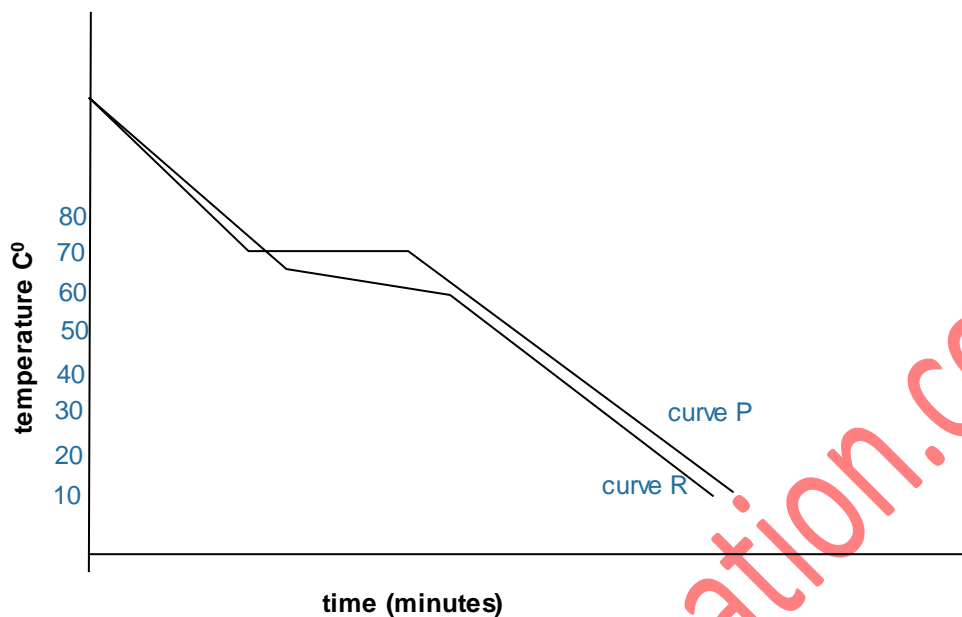
- ii. Which solution is likely to dissolve phosphorous (v) oxide? Explain (2marks)

4. The set-up below shows preparation and collection of oxygen.



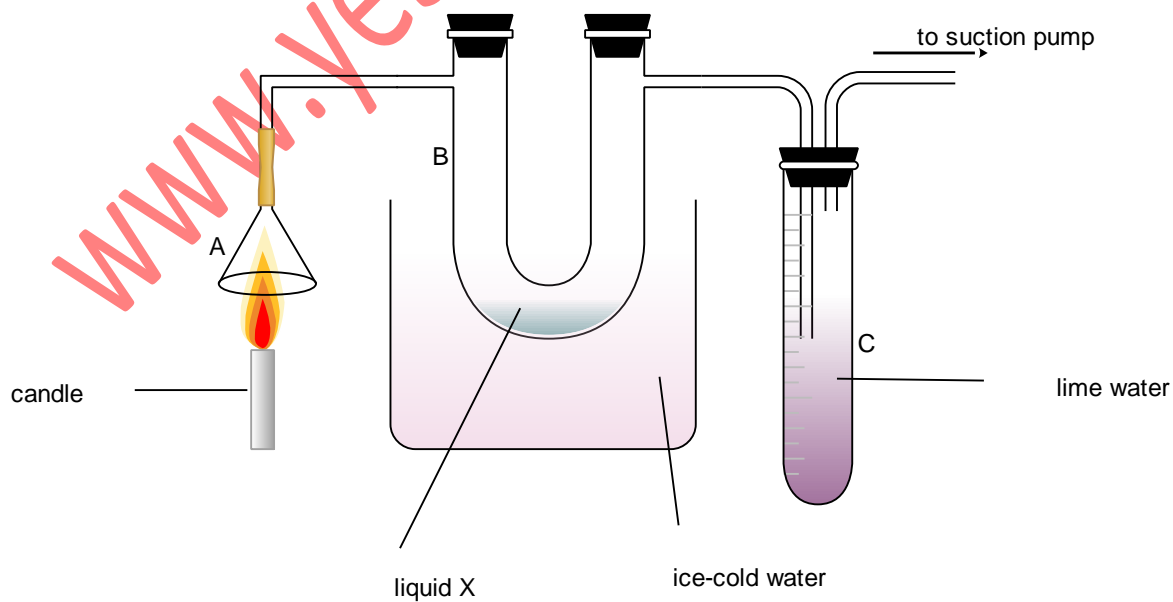
- i. What is X? (1mark)
- ii. State two other reactions which are used in the laboratory preparation of oxygen. (2marks)
- iii. Write the equation for reaction in the experiment. (1mark)
- iv. Most elements react with oxygen to form oxides.
 - I. Give two examples of acidic oxides and write equations for their reactions with water. (4marks)
 - II. Give three examples of basic oxides and write equations for their reaction with water. (6marks)

5. Below are cooling curves for compound X.



i. What is the melting point of pure X? Explain your answer. (2marks)

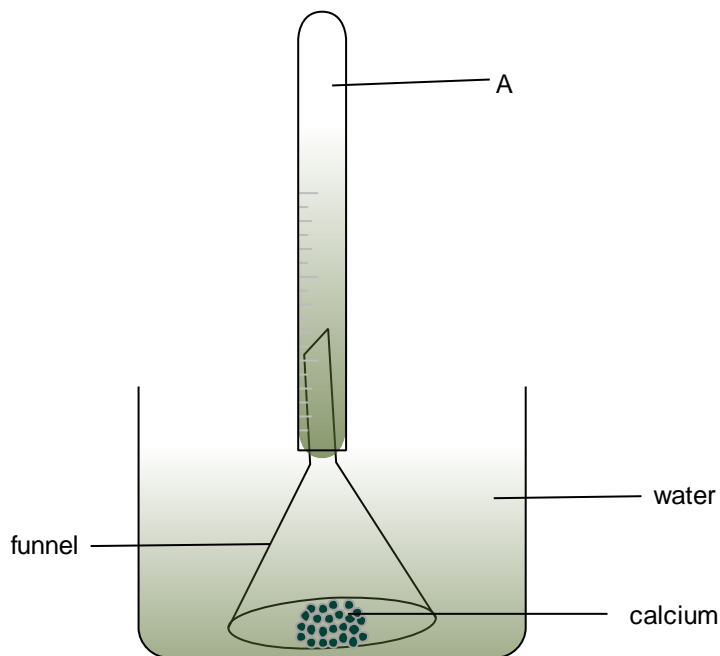
6. An experiment is done to investigate the burning of candle as shown in the experiment below.



- i. State the use of each of the following in the experiment:
- I. Ice-cold water (1mark)

 - II. Suction pump (1mark)
- ii. Is candle burning a chemical or physical change? Explain your answer. (2marks)
- iii. Name liquid X. (1mark)
- iv. State the observation made at C. (1mark)
- v. Write a chemical equation to explain the observation in C. (1mark)
- vi. Explain what happens when the suction pump is switched off. (2marks)
- vii. Describe two chemical tests for liquid X (2marks)

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



- i. Explain why calcium sinks in when it is placed in water. (1mark)
- ii. Name A (1mark)
- iii. Other than sinking, state and explain the observations made when calcium is placed in water. (4marks)
- iv. Write an equation for the reaction of calcium in water. (1mark).

8. Write chemical equations for the following reactions.
Zinc and hydrochloric acid. (1mark)

Copper (ii) carbonate and nitric acid.

(1mark)

Iron (iii) oxide and sulphuric acid.

(1mark)

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