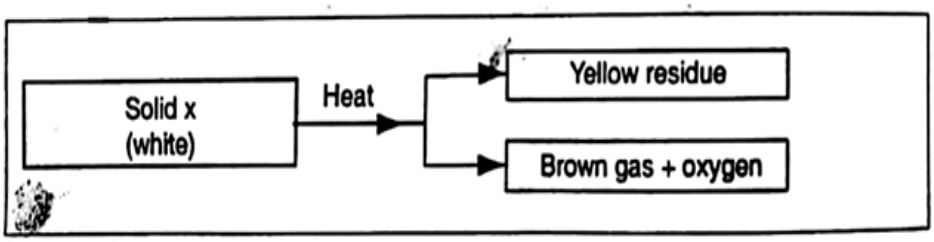
ANESTAR VICTORY BOYS HIGH SCHOOL - LANET

CHEMISTRY HOLIDAY ASSIGNMENT- FORM II (2021)



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

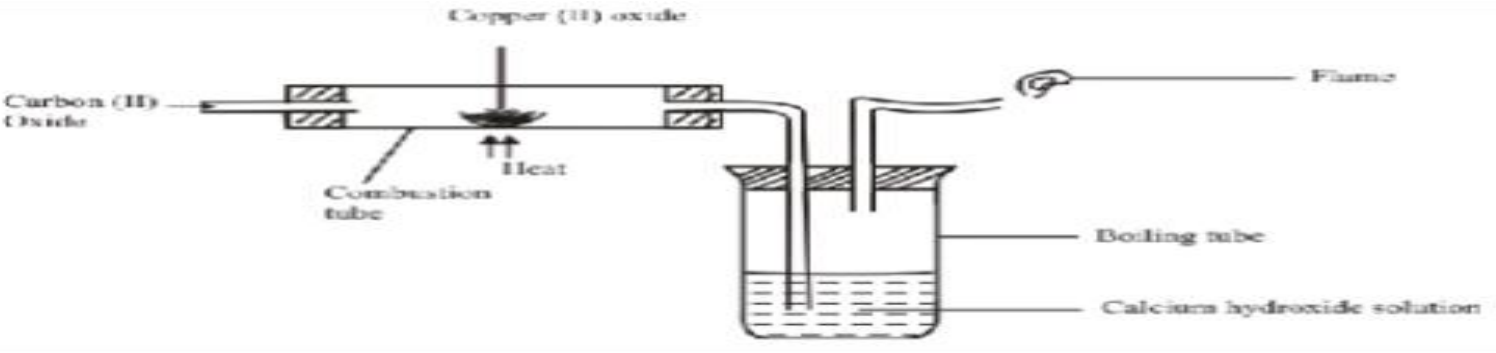
Name:

a) solid X (1mk)

b) The yellow residue (1mk)

c) Write the chemical equation for the decomposition of substance X (1mk)

2. Study the experimental set up of apparatus shown below.



a) State two observations made in the set up as the experiment progressed (2mk)

b) Using an equation, explain the change that occurred in the boiling tube (1 mark)

c) Why was the gas burned in the flame? (1 mark)

3. Painting, oiling, galvanizing and tin plating are methods of rust prevention.

i. Explain the similarity of these methods in the way they prevent rusting(1 mark)

ii. Explain why galvanized iron objects are better protected even when scratched

(1mark)

4. Two carbonates P and Q are weighed before and after heating. The results are given in the table below.

Carbonate	Mass in grams	
	Before heating	After heating
P	15.0	15.0
Q	15.0	10.0

Which one is likely to be sodium carbonate? Explain. (2 marks)

5. The chemical equations below are the main reactions in large scale manufacture of sodium carbonate.

$NH_{3(g)} + CO_{2(g)} + H_2O_{(l)} \rightarrow NH_4HCO_{3(aq)}$

$NH_4HCO_{3(aq)} + NaCl_{(aq)} \rightarrow NaHCO_{3(s)} + NH_4Cl_{(aq)}$

a. Explain how the two products $NaHCO_3$ and NH_4Cl are separated (1mk)

b. How sodium carbonate is finally obtained? (1mk)

c. Explain how ammonia is recovered in this process. (1mk)

6. Describe how you would separate a solid mixture of lead(II) chloride and copper(II) oxide (3mks)

7. The table below shows the relative atomic masses and percentages abundance of the isotopes $\mathbf{M_1}$ and $\mathbf{M_2}$ of element **M**

Isotope	Relative abundance	% abundance
M_1	60.57	59.71
M_2	62.83	40.29

Calculate the relative atomic mass of element **M (3mks**)

8. Distinguish between ionic and covalent metallic and coordinate bonds. (6marks)

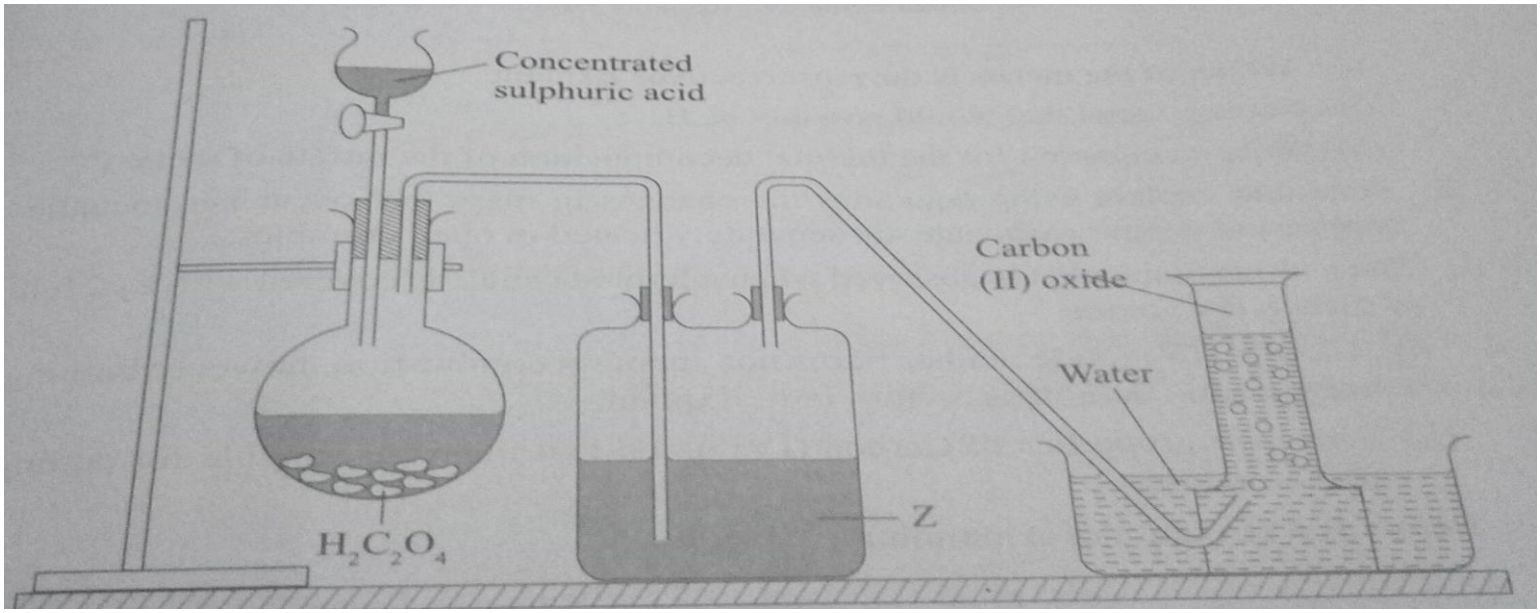
9. Explain using equations, the changes observed when carbon(iv) oxide is bubbled through calcium hydroxide solution until there is no further change occurs. (3mks)

10. State four applications of carbon in real life. (4mks)

11. Graphite is a poor conductor of electricity at high temperature. Explain (2mks)

12. Diamond and graphite are two allotropes of carbon. Describe an experiment that would show that both substances are allotropes of carbon. (4mks)

13. The apparatus illustrated below were used to prepare and collect carbon (ll) oxide in the laboratory



i. State the conditions necessary for the reaction to occur. (2mks)

ii. Identify substance Z and state its role in this reaction (2mks)

iii. Write an equation for the reaction. (1mk)

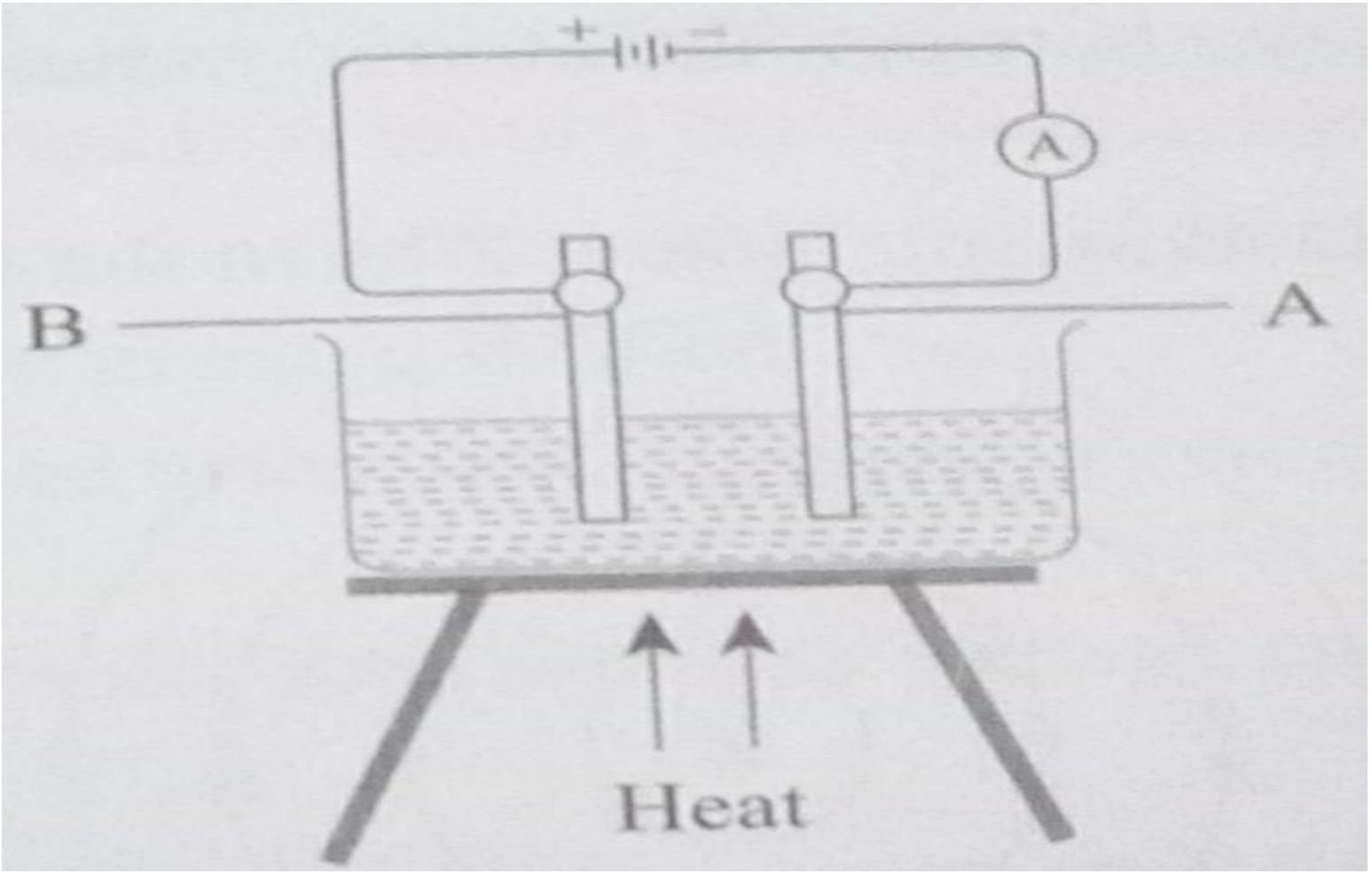
iv. Explain why carbon (ll) oxide is collected over water (1mk)

v. Carbon (ll) oxide is not collected by downward delivery. Explain. (2mks)

14. What is an electric current? (1mk)

15. Suggest a reason for the electrical conductivity in the substances that conduct. (2mks)

16. The diagram below represents a set up of apparatus used to investigate the effect of electric current on Lead (ll) oxide. Study it and answer the questions that follow.



a) Identify the cathode and the anode (2mks)

b) What is the role of the cell/battery on the set-up? (2mks)

c) State and explain the observations made when the swith is closed. (Use equations where possible) (4mks)

d) State four applications of electrolysis in real life (4mks)

17. What are salts? (1mk)

i. State FOUR major methods of preparing salts. (4mks)

ii. Starting with dilute nitric (v) acid, describe how you can prepare crystals of potassium nitrate (4mks)

iii. State any FOUR disadvantages of evaporating a solution to dryness during preparation of salts (4mks)

18. Differentiate between chemical bond and structure of a substance. (2mks)

19. Aluminum chloride behaves as covalent rather than ionic. Explain. (2mks)

20. Use dot(s) (•) and crosses (X) to show bonding in dimer aluminum chloride (Al_2Cl_6) (3mks)

21. What do you understand by the term "chemical families of elements"? (1mk)

22. Briefly explain the following observations.

a) Alkaline earth metals are generally less reactive than alkali metals in the same period (2mks)

b) Generally, metals reacts by losing electrons while halogens reacts by gaining electrons. (2mks)

c) Group (VIII) elements are gases at room temperature (2mks)

d) Though sodium and aluminum are in the same period and are both metals, aluminium is better conductor of electricity. (2mks)

e) Many cooking pans are made of aluminum although it is a reactive metal. Explain. (2mks)

f) Nobles gases are generally ureactive (2mks)

23. What are the oxidation numbers and the charges of the following substances?

I. Copper (l) ion (2mks)

II. Hydrogen in hydrogen peroxide (2mks)

III. Potassium in potassium permanganate ($KMnO_4$) (2mks)

IV. Sulphur in H_2SO_4 (2mks)