Name: _____ Adm No: _____Class: _____

Candidate's Signature: _____Date: _____

CHEMISTRY
FORM 2
END TERM 3 2024
Time: 2 HOURS

Instructions to Candidates

- *Answer **all** the questions in the spaces provided.*
- *Write your **name** and **admission number** in the spaces provided above.*
- *Electronic calculators may be used for calculations.*
- *All workings **must** be clearly shown where necessary*

For Examiner's Use only:

QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
1 – 21	**70**	

1. An atom is said to be electrically neutral. Explain. (1mk)

2. Define the following terms:

a) Atomic mass (1mk)

b) Isotopes (1mk)

3. Give two reasons why most laboratory apparatus are made of glass (2mks)

4. You are provided with water, lead carbonate, and dilute nitric (V) acid and solid sodium chloride. Describe in very clear steps how you would prepare a sample of lead chloride. (3mks)

5. Study the table below and answer the questions that follow: -

Substance		A	B	C	D	E	F
Melting Point (^oC)		801	113 OR 119	-39	5	-101	1356
Boiling point (^oC)		1410	445	457	54	-36	2860
Electrical Conductivity	Solid	Poor	Poor	Good	Poor	Poor	Poor
	liquid	Good	Poor	Good	Poor	Poor	Poor

Identify with reasons the substances that:

a) Have a metallic structure (2mks)

b) Have a molecular structure (2mks)

c) Substances A and C conduct electric current in the liquid state. State how the two substances differ as conductors of electric current (2mks)

6. Sodium chloride is contaminated with copper (II) oxide. Explain how a pure sample of sodium chloride can be obtained from the mixture (2mks)

7. A student was supplied with a colorless liquid suspected to be water;
   i) Describe one chemical test that could be carried out to show that the liquid was water (2mks)

   ii) How could it have been shown that the liquid was pure water (1mk)

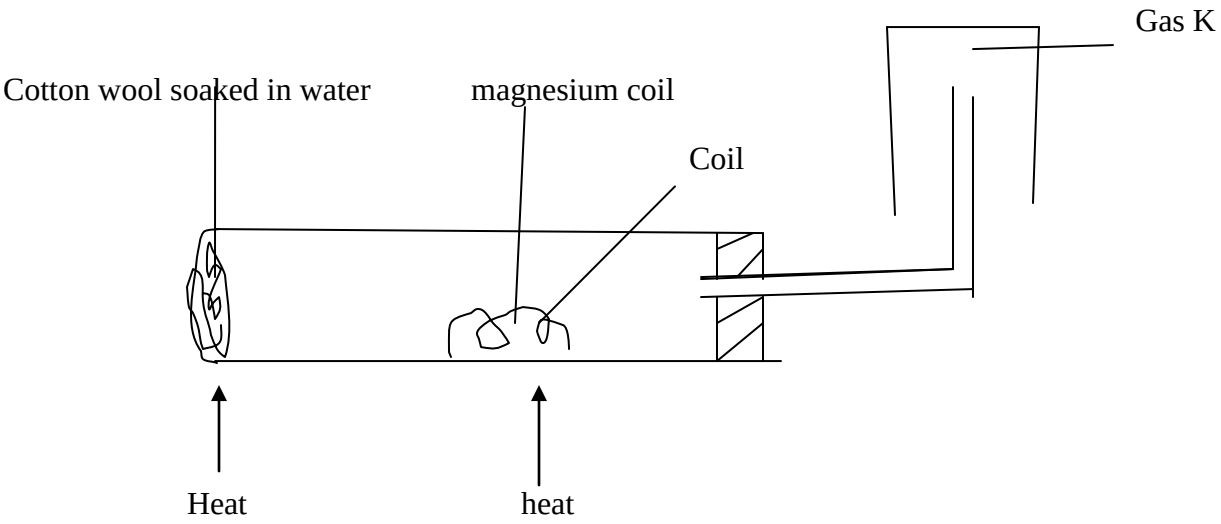
8. Using dots (.) and cross (x) diagram, show how bonding occurs in;
   a) Ammonium ion (NH_4^+) (2mks)

   b) Magnesium nitride (Mg_3N_2) (2mks)

9. a) What is a flame (1mk)

   b) Give two differences between luminous and non-luminous flame. (2mks)

10. A student set up the experiment below to collect gas K. the glass wool was heated before heating the magnesium coil.



a) Explain why it was necessary to heat the moist cotton wool before heating the magnesium. (2mks)

b) Identify gas K. (1mk)

c) What property of gas K makes it possible to be collected by the method shown? (1mk)

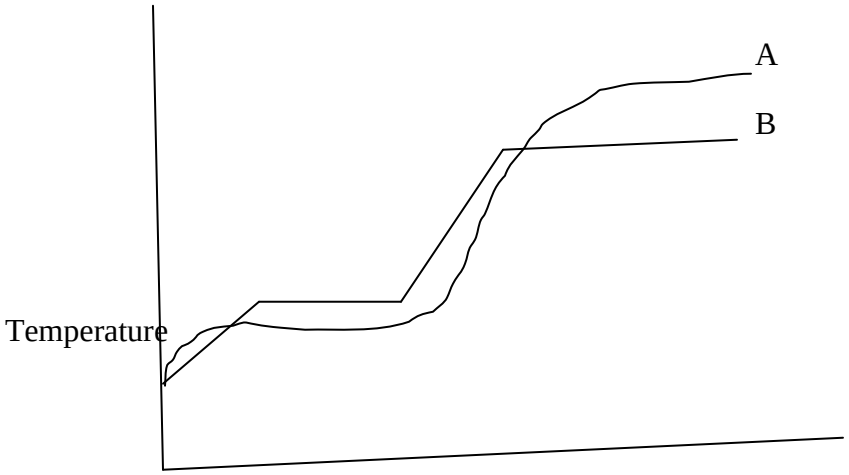
d) Write a chemical equation for the reaction that produced gas K. (1mk)

11. Lithium has two isotopes with mass number 6 & 7. If the relative atomic mass of lithium is 6.94, determine the percentage abundance of each isotope (3mks)

12. State the reasons why solid carbon (IV) oxide is used by ice cream vendors instead of ordinary ice (2mks)

13. List two differences between temporary physical change and permanent chemical change. (2mks)

14. The curves below represent the variation of temperature with time when pure and impure samples of a solid were heated separately.



(a) Which curve represents the variation in temperature for pure solid? Explain. (2mks)

(b) State the effect of an impurity on the boiling points of a pure substance. (1mk)

15. Cars in Mombasa are found to rust faster than cars in Nairobi. Explain. (2mks)

16. The table below shows some elements in the periodic table. Use it to answer the questions that follow. The letters are not the actual symbols of the elements.

									F
A	G		E		B		D		
C									

a) Show the electron arrangement of ions of elements: (1mk)

A

B

b) Show on the grid above the position of an element Y whose ion Y^{2-} has an electron configuration of 2.8.8 (1mk)

c) Compare the following with explanation.

i) The reactivity of A and C. (2mks)

ii) Atomic radii of elements A and B. (2mks)

iii) The melting point of the oxide of element G and the oxide of D.
(2mks)

d) Name the type of bond formed when E and D react. Explain your answer.
(1mk)

e) The ionic radius of element D is bigger than its atomic radius. Explain. (2mks)

17. Explain why a mixture of copper (II) oxide and magnesium reacts when heated while there is no reaction when a mixture of copper and magnesium oxide is heated (2mks)

18. Write down balanced chemical equations to show what the following salts produce when strongly heated;
a) KNO_3 (2mks)

b) $NaHCO_3$ (2mks)

19. Atoms of element X exists as $^{14}_{6}X$ and $^{12}_{6}X$

(a) What name is given to the two types of atoms? (1mk)

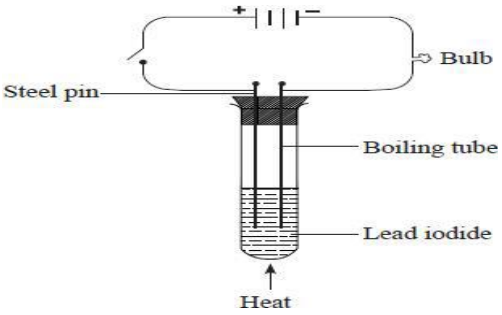
(b) Use dot (·) and cross (x) diagrams to illustrate the atomic structure of $^{14}_{6}X$ (2mks)

20. Write the chemical formula of the following compounds. 2mks

(i) Sodium carbonate

(ii) calcium hydroxide

21. The diagram below shows a set-up which was used by a student to investigate the effect of electricity on molten lead (II) iodide.



a) Explain what happens to the Lead (II) iodide during electrolysis (2mks)

b) Why does solid lead (II) iodide not allow the passage of electricity? (1mk)

c) Write equations to show the reaction taking place:

i) At the cathode. (1mk)

ii) At the anode. (1mk)