



MARANDA HIGH SCHOOL

The Kenya Certificate of Secondary Education

POST-MOCK II FORM 4

233/1

Chemistry (Theory)

Paper 1

SEPT, 2025

Time: 2 Hours

Name: Adm No:

Stream: Signature:

233/1 Chemistry PP1 - Theory

Date.....

Instructions to Candidates

- Write your name and Admission number in the spaces provided above.
- Sign and write the date of examination in the spaces provided above
- Answer **ALL** the questions in the spaces provided below each question.
- Mathematical tables and silent electronic calculators may be used.
- All working **MUST** be clearly shown where necessary.
- This paper consists of 11 printed pages

For Examiner's Use Only

Questions	Max. Score	Candidate's Score
1 – 29	80	

1.) Explain one feature of a base of a Bunsen burner that makes it able to perform its function. (1mrk)

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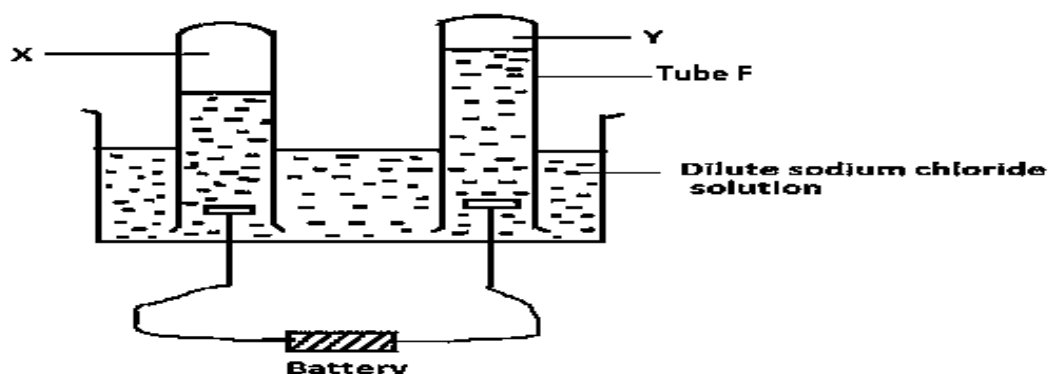
b) an experiment was carried out by slipping a wooden splint at the middle part of the Bunsen flame several times and repeated at the outermost part of the flame. Draw how the wooden splint would appear when passed at the middle part of the flame. (1mrk)

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c) State the aim of the experiment. (1mrk)

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2.) The diagram below shows a set-up used to electrolyze dilute sodium chloride solution using inert electrodes and collect the gaseous products.



i) Explain why the volume of gas X is more than that of Y. (2mrks)

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ii) If dilute sodium chloride was replaced with concentrated sodium chloride solution, explain how the volumes of the gases would vary. (1mrk)

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3.) Describe how you can obtain sample of sodium chloride crystals from a mixture of aluminium chloride, sodium chloride and copper (II) oxide. (3mrks)

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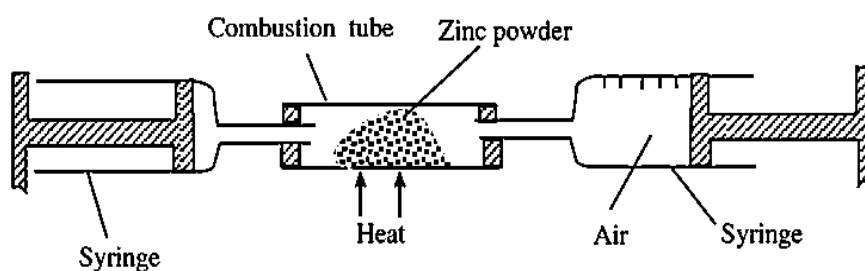
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4.) Study the diagram and use it to answer the questions that follow.



Explain the following:

a) Air is passed repeatedly over heated copper. (1mrk)

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b) The Air is passed slowly into the tube containing Zinc solid. (1mrk)

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5.) Describe how dilute hydrochloric acid and wooden splint can be used to distinguish the gases produced when Zinc carbonate and Zinc Metal are used. (3mrks)

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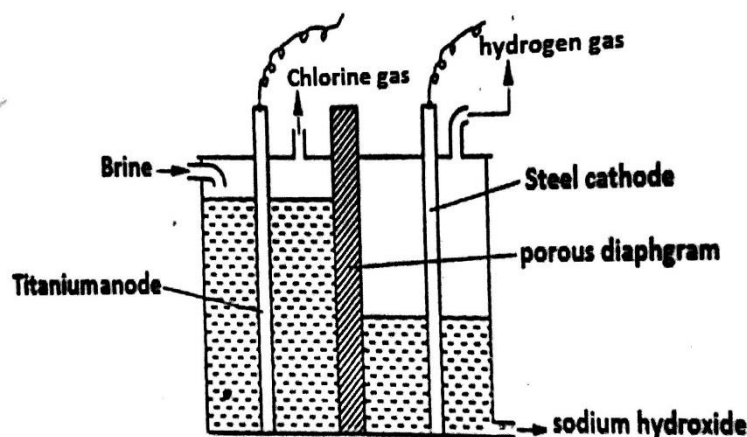
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6.) Study the diagram and use it to answer the questions that follow.



Describe how sodium hydroxide is manufactured by this process. (2mrks)

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7.) Describe how oil can be extracted from sunflower seeds. (2mrks)

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b) Sodium hydroxide solution has a slippery feel when touched explain. (1mrk)

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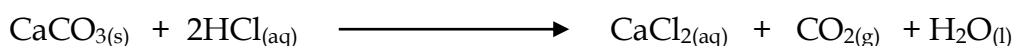
8.) Describe how plastic sulphur is prepared in the laboratory. (2mrks)

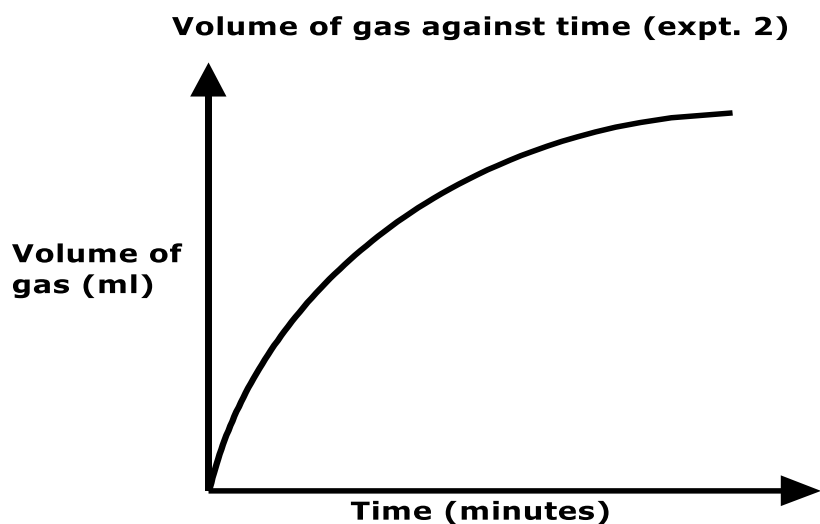
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b) Explain why two holes are pierce on the surface of crust as molten sulphur cools. (1mrk)

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9.) Study the graph for a reaction and use it to answer the questions that follow.





The reaction was very fast at the **beginning**, **slows down** and **eventually stops** Explain the observations. (2mrks)

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10) Given the following data;

$\Delta H_c(C) = -393\text{kJ/Mole}$, $\Delta H_c(H_2) = -286\text{kJ/Mole}$, $\Delta H_c(C_4H_{10}) = -2320\text{kJ/Mole}$

. Calculate the enthalpy of formation of butane. (2mks)

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11.) State the pH of aluminium chloride solution. Explain. (2 marks)

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12.) The reaction between sodium peroxide and water is used in the preparation of oxygen. Write an equation for the reaction. (1mark)

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(b) Oxygen was passed over heated zinc. State what was observed. (1 mark)

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13.) The grid below represents part of periodic table. Study it and answer the questions that follow. The letters do not represent the actual symbols of the elements.

[illegible]

(a) (i) Select the elements which belong the same family. (1mark)

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(ii) Write the formula of elements in the same period. (1mark)

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14.) Write equation for the reaction taking place when bromine gas is reacted with hot concentrated sodium hydroxide. (1mrk)

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b) When chlorine gas is bubbled into a solution of potassium iodide, brown solution is observed, explain. (1mrk)

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c) Explain why chlorine gas is moderately soluble in water. (1mrk)

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15.) Addition of sodium hydroxide solution containing aluminium ion forms a white precipitate soluble in excess, Explain. (1mrk)

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Aluminium metal is extracted from aluminium oxide by electrolysis.

Give two reason why this method is expensive. (1mrk)

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c) Calculate the mass aluminium metal obtained when a current of 5A is used for 2hours and 30 minutes ($1F=965000C$, $Al=27$) (2mrks)

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16.) Monoclinic sulphur is one of the allotrope of sulphur. Draw the structure of the rhombic sulphur. (1mrk)

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b) Explain the observations made when monoclinic sulphur is heated till it boils. (2mrks)

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17.) Distinguish between Nuclear fission and Nuclear Fusion (2mrks)

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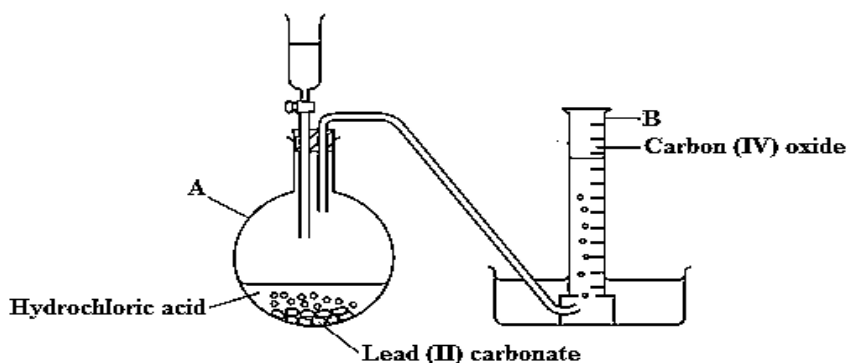
b) A mass of **M** grams of radioactive isotopes decays to 5g in 100days, the half- life of the isotopes is 25 days. Calculate the initial mass of the isotopes. (2mrks)

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18.) Carbon (IV) oxide can be prepared in the laboratory using the apparatus shown below.



(a) State the names of the pieces of apparatus labelled A and B. (1mark)

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(b) State the correct for any one mistake in the set up. (1mark)

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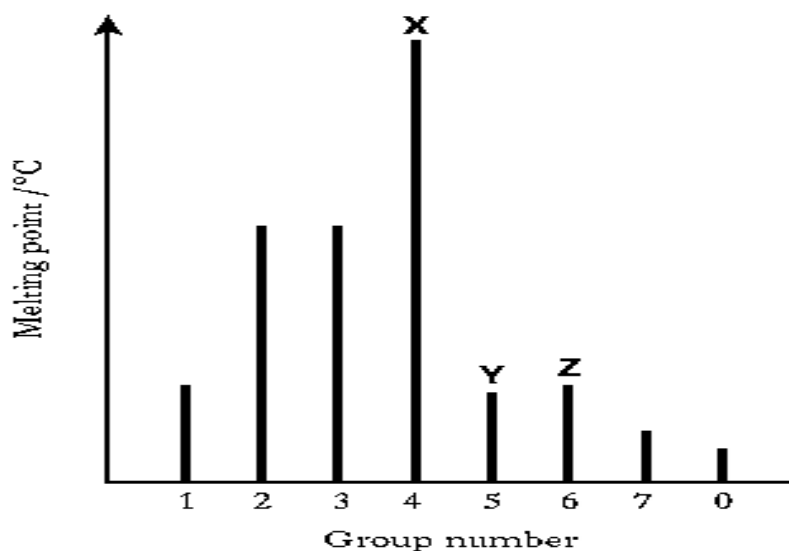
(c) State **two** observations made during the experiment. (2 marks)

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19.) Using Sodium carbonate solid describe how you would distinguish between 70cm³ of 0.3M hydrochloric acid and 70cm³ of 0.3M Acetic acid. (2mrks)

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20.) The diagram shows the melting points of successive elements across period 3 in the Periodic Table.



Explain the difference in melting point between elements:

(i) X and Y. (2 marks)

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(ii) Y and Z

(2 marks)

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21.) Write equation for the reaction for the laboratory preparation of Nitric (V) acid.

(1mrk)

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b) Starting with ammonia gas describe how you would prepare Nitrogen (IV)Oxide.

(2mrks)

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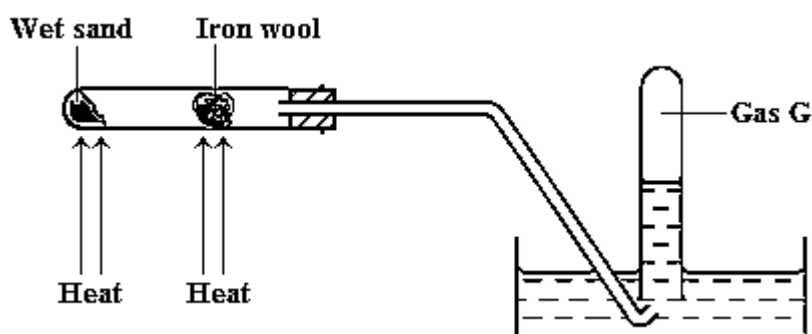
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22.) The diagram below shows an experimental set involving iron.



(a) State **one** observation made in the combustion tube.

(1mark)

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(b) Write an equation for the reaction that occurs in the combustion tube.

(1mark)

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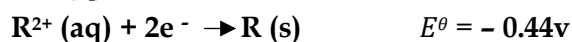
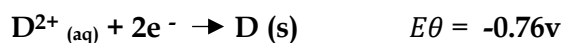
(c) State the chemical test for gas G.

(1mark)

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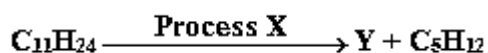
23.) Study the reduction potentials below and use it to answer the questions that follow.



Calculate the emf for the reaction above. (2mrks)

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24) The molecular formula of hydrocarbon is $\text{C}_{11}\text{H}_{24}$. The hydrocarbon was converted to other hydrocarbons as shown below:



(a) State **two** Conditions for Process X. (2 marks)

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(b) State the Observations made when a few drops of chlorine water were added to the sample of Y. (1mark)

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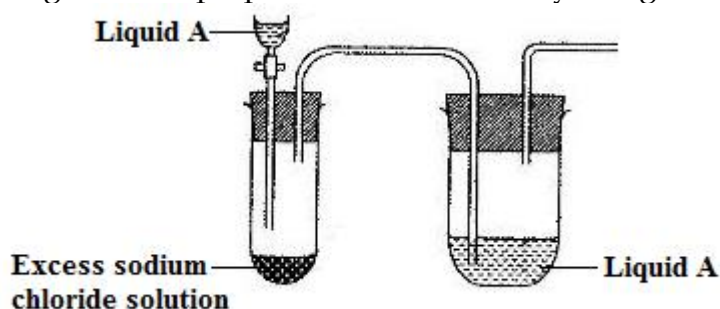
25.) Name the ions responsible for permanent water hardness. (1mrk)

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b) When hard water is boiled it produced a colourless gas that forms a white precipitate with Calcium hydroxide. Explain how the gas is produced. (2 marks)

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26.) Hydrogen chloride gas can be prepared in the laboratory using the set-up below.



(a) Name Liquid A.

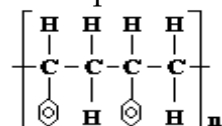
(1mark)

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(b) State and explain the observation made when sodium carbonate is added to Hydrogen chloride gas in hexane. (2 marks)

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27.) The structural formula below represents a portion of a polymer.



(i) Give one property of the polymer that makes it suitable to be used in making ceiling tiles. (1mark)

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(ii) Give one disadvantage of continued use of the above polymer. (1mark)

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28.) 100cm³ of a mixture of ethane and excess oxygen were ignited. When the final volume was cooled and bubbled through aqueous, NaOH, it was reduced by 32cm³. Calculate the composition of the original mixture. (2mrks)

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29.) What is Solubility Curve. (1mrk)

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b) Use the table below to answer the questions that follow.

Salt	Solubility at	
	70°C	35°C
A	38	28
B	78	79

A mixture of 38g of A 78g of B in 100g of water at 70°C was cooled to 35°C.

(a) Identify the Crystal formed and Calculate its mass. (2 marks)

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