NAME:_____ CLASS: ____

MZUZU DIOCESE

2022 MALAWI SCHOOL CERTIFICATE OF EDUCATION MOCK EXAMINATIONS

CHEMISTRY

Subject Number: M038/II

Thursday, 7th July, 2022

TIME ALLOWED: 2 HOURS SESSIONS

PAPER II

(40 Marks)

Practical

INSTRUCTIONS

1. **This paper contains 5 printed pages. Please check.**
2. **Fill in your name and class at the top of each page.**
3. **Answer all 4 questions in the spaces provided.**
4. **Use of electronic calculators is allowed.**
5. **The maximum number of marks for each answer is indicated against each question.**
6. **In the table provided on this page, tick against the number of the question you have answered.**

Question number	Tick if answered	Do not write in these columns	
1			
2			
3			
4			
	Total		

NAME:_____ **CLASS:** ____

1. A newly discovered element represented by the symbol X is suspected to belong to group I of the periodic table.

   i. Describe an experiment you would do to prove that the element belongs to group I.

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(8 marks)

   ii. Write a balanced chemical equation for the reaction between element X and water.

_____

(2 marks)

NAME:_____ **CLASS: ____**

2. Describe an experiment that could be done to find the concentration of HCl using 0.1 M of NaOH by titration.

(10 mark)

NAME:_____ **CLASS:** ____

3. You are provided with 3 pieces of aluminum foil, 3 pieces of coper foil, 3 iron nails, copper sulphate ($CUSO_4$) solution, aluminium nitrate ($Al(NO_3)_3$) solution, iron sulphate ($FeSO_4$) solution, a measuring cylinder, distilled water in a wash bottle and 3 test tubes in a test tube rack.

a) Put $3cm^3$ of each of the solution into separate test tubes.

b) Put a piece of aluminum foil in each test tube.

c) Leave the pieces of aluminum foil in the solutions for a minute.

d) Observe any changes and record your observation in **table 1**.

Table 1

Solution / **Metal**	**Copper Sulphate**	**Aluminium Nitrate**	**Iron Sulphate**
Copper			
Aluminium			
Iron			

(6 marks)

e) Rinse the test tubes with distilled water.

f) Repeat steps **a** to **e** using copper foil and iron nails.

g) How did you know whether a reaction took place or not.

_____

(1mark)

h) Arrange the metals in order of reactivity, with the most reactive metal at the top.

(3 marks)

4. You are provided with sodium hydroxide (NaOH) pellets, ammonium chloride (NH_4Cl), distilled water, a thermometer, stirring rod, a measuring cylinder , a spatula, test tube and test tube rack.
   a. Fill the test tube half -full of distilled water.
   b. Measure the initial temperature of the water and record it in the table of results.
   c. Add 5 pellets of NaOH to the distilled water and stir until the pellets dissolve.
   d. Measure the temperature of the solution and record it in the table of results.
   e. Repeat steps **a** to **d** using half a spatula of NH_4Cl and state whether the reaction is 'exothermic' or 'endothermic' in the table provided.

Table of Results

SOLUTION	**Initial Temp (ºC)**	**Final Temp (ºC)**	**Type of reaction**
$NaOH_{(s)}+H_2O_{(l)}$			
$NH_4Cl_{(s)}+ H_2O_{(l)}$			

(6 marks)

   f. Explain the difference between exothermic and endothermic reaction in terms of temperature change.

_____

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(2 marks)

   g. Write the chemical equation for the exothermic reaction stated in the table above.

_____

(2 marks)

End of question paper