

EXAMINATION NUMBER: \_\_\_\_\_

**BLANTYRE RURAL DISTRICT EXAMINATIONS**

**2024 MALAWI SCHOOL CERTIFICATE OF EDUCATION MOCK EXAMINATIONS**

# **CHEMISTRY**

**Time Allowed: 2 hours      10:00 am onwards**

**PAPER II (40 marks)**

**PRACTICAL**

**Instructions**

1. This paper contains **6** printed papers.  
Please check.
2. Write your answers on the question paper  
in the spaces provided. The maximum  
number of marks for each answer is  
indicated against each question
3. Before you begin, fill in your  
examination number on top of each page  
of the question paper.
4. At the end of the examination, hand in your paper  
to the invigilator

Question Number	Tick if answered	Do not write in these columns	
1			
2			
3			
4			
		<b>Total</b>	

### SECTION A (20 MARKS)

1. a. In the experiment to test purity and hardness of water, some samples were collected and analyzed. The results are shown in the table below

**Table 1.**

Test	Results		
Sample	X	Y	Z
Boiled first and then shaken with soap solution	Good lather	Good lather	Poor lather
Some bath salts added, then shaken with soap solution after filtering	Good lather	Good lather	Good lather
Shaken with soap solution	Poor lather	Good lather	Poor lather

- i. Identify the sample that is pure water. Explain your answer.

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**(2 marks)**

- ii. The other samples from the table were both from hard and soft water areas

1. Which one contained temporary hardness?

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**(1 mark)**

2. Which one contained permanent hardness? Explain your answer.

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**(2 marks)**

- b. In an experiment of electrolysis, John and Mary observed that after changing solutions of an ionic compound, bulbs gave different brightness. They set up an experiment to investigate whether concentration affect the brightness of the bulb or not.

i. Identify the problem that was being investigated in this experiment.

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\_\_\_\_\_ (1 mark)

ii. State one possible hypothesis to be tested.

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\_\_\_\_\_ (1 mark)

iii. Mention one factor that could be controlled in this experiment.

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\_\_\_\_\_ (1 mark)

iv. Explain any two ways how the data collected would be presented

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\_\_\_\_\_ (2 marks)

2. Describe the functions of the three pipes during the extraction of Sulphur by the frasc process.

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(6 marks)

b. Describe how electroplating is used in metal extraction

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(4 marks)

### SECTION B (20 MARKS)

3. You are provided with two beakers, two test tubes, a measuring cylinder, a spatula, a stirring rod, a thermometer, water, sodium hydroxide (NaOH) pellets and potassium chloride crystals.
- Measure 10 ml of water and pour in one test tube.
  - Measure and record the initial temperature of the water.
  - Add half a spatula of Sodium hydroxide pellets and stir to dissolve.
  - Measure and record the constant final temperature of the solution.
  - Repeat steps a to d using potassium chloride.

	Initial Temperature ( <i>i</i> ) (°C)	Final Temperature ( <i>f</i> ) (°C)	Temperature change ( <i>f - i</i> ) (°C)
Sodium hydroxide			
Potassium Chloride			

(3marks)

- (i). Identify the exothermic and endothermic reactions from the above experiments.

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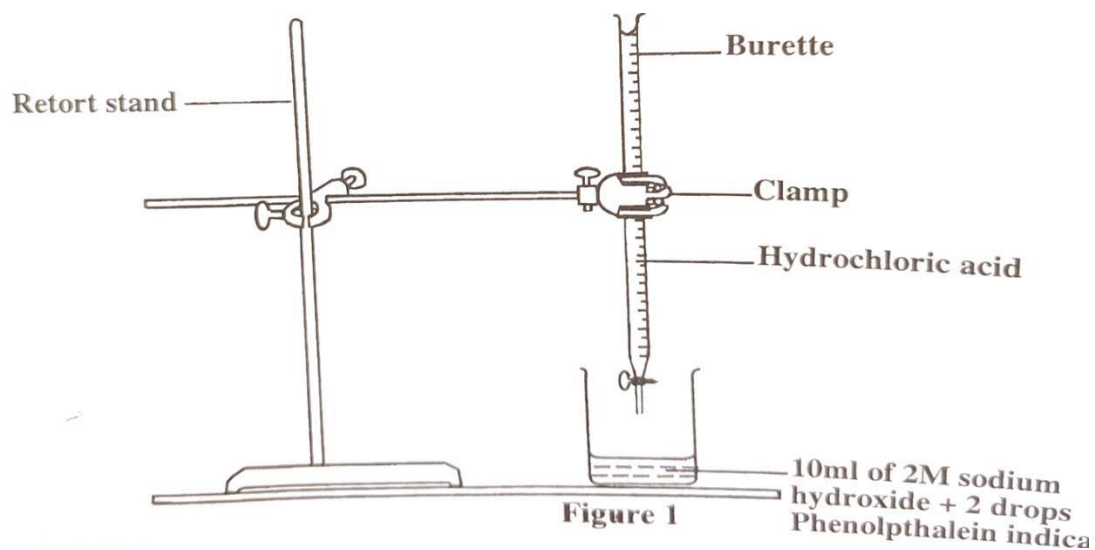
(2 marks)

- (ii). Draw the energy level diagrams of the reaction between sodium hydroxide and water.



(5 marks)

4. You are provided with a burette, a beaker, 0.1M sodium hydroxide (NaOH), Hydrochloric acid (HCl), measuring cylinder, a beaker, funnel, phenolphthalein indicator, dropper, clamp and clamp stand, white tile.
- Put 10ml NaOH in a beaker
  - Arrange the set up as below



- Add 2 to 3 drops of phenolphthalein indicator into the beaker.
- Fill the burette to zero mark with hydrochloric acid (HCl).
- Record initial volume of acid in **Table 2**.

**Table 2**

Initial volume of <b>HCl</b>	Final volume of <b>HCl</b>	<b>HCl used</b>

**(3 marks)**

f. Gradually add **HCl** into **0.1M NaOH** until endpoint is reached.

g. Record final volume of **HCl** in **Table 2**.

i. Calculate the concentration of acid used.

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**(5 marks)**

ii. Identify the standard solution from the experiment.

\_\_\_\_\_ **(1 marks)**

iii. State the function of the white tile in this experiment.

\_\_\_\_\_ **(1 marks)**