



CENTRAL WEST EDUCATION DIVISION

2025 MALAWI SCHOOL CERTIFICATE OF EDUCATION MOCK EXAMINATION

CHEMISTRY

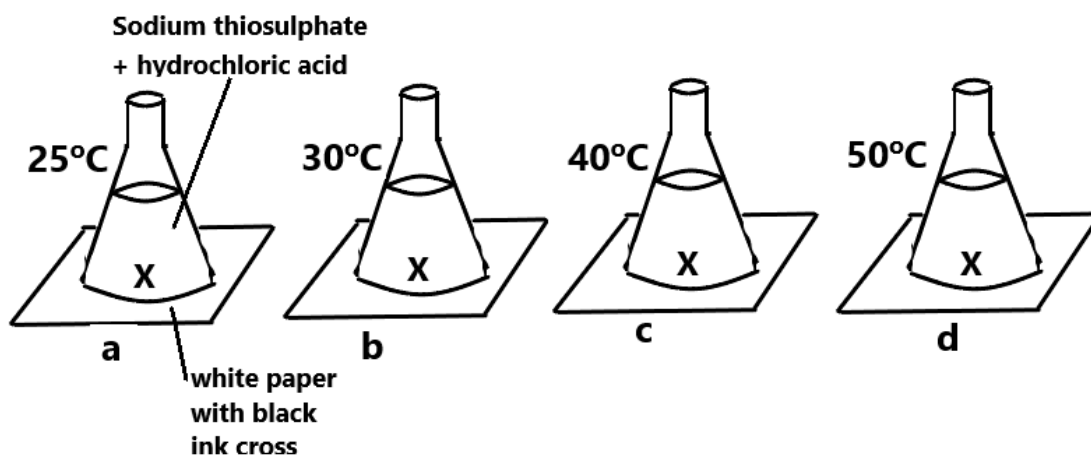
Subject Number: M038/II

**PAPER II
(PRACTICAL)
(40 MARKS)
MARKING KEY**

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Section A (20 marks)

1. .

- a. Set up the experiment as shown below

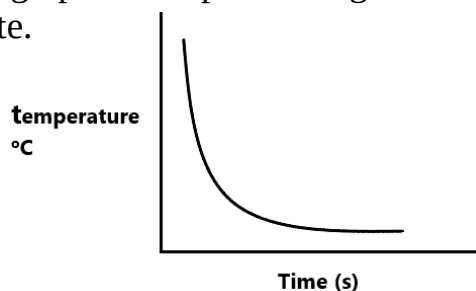


- b. Make a black ink cross on a white paper.
c. Measure 20ml of 0.2M sodium thiosulphate and pour into four different conical flasks.
d. Place the conical flask on top of the white paper with an ink cross on it.
e. Add hydrochloric acid into the conical flask containing sodium thiosulphate.
f. Start the stopwatch and swirl the contents of the conical flask.
g. Stop the stop watch when the black ink cross disappears.
h. Note and record the time taken for the ink cross to disappear.
i. Repeat steps (a to h) by warming the substances up to 30°C, 40°C and 50°C.

Temperature (°C)	25	30	40	50
Time taken				

(1)

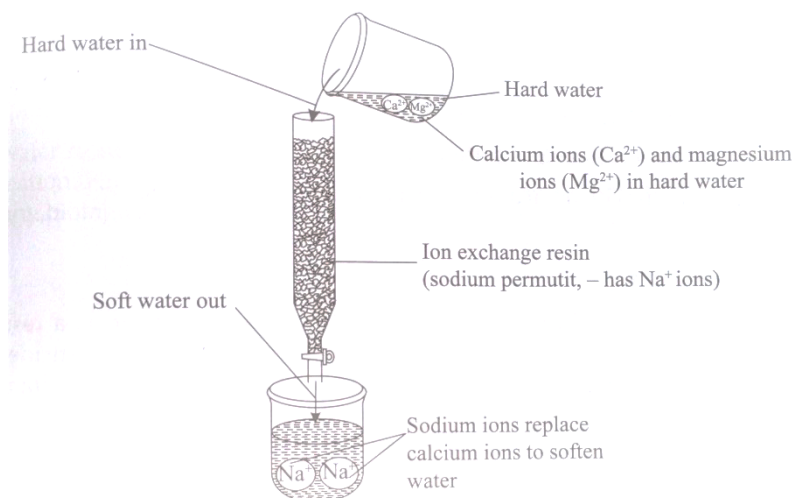
- j. Plot the graph of temperature against time taken for the reaction to complete.



- k. Increase in temperature increases the rate of a chemical reaction, when temperature is high it takes time for the reaction to complete.

2. .

a. Set up the experiment as shown below



- b. The resin contains sodium ions on the permutit column. (1)
- c. Hard water which contains calcium (Ca^{2+}) ions or magnesium (Mg^{2+}) ions (1) and are responsible for water hardness is passed through the resin. (1)
- d. Magnesium ions or calcium ions are exchanged with sodium ions (1) as hard water is passed through the permutit column.
- e. Magnesium ions or calcium ions remain on the permutit column. (1)
- f. Soft water containing sodium ions passes (1) through and sodium ions do not cause water hardness. (1)

Section B (20 marks)

3. .

Table 1

Organic compound	Observation after adding:		
	Distilled water	Bromine Solution	Brady's reagent
A	Two layers (insoluble)	Brown	Orange
B	One layer (soluble)	Brown	Orange
C	One layer (soluble)	Brown	Yellow
D	Two layers (insoluble)	Colourless	orange
	(1)	(1)	(1)

(one mark for all correct observations for a test)

- f. A Cyclohexane (1 mark)
 B ethanol (1 mark)
 C ethanal (1 mark)
 D hexane (1 mark)
- g. B Alkanol (1 mark)
 C Alkanal (1 mark)
- h. $C_nH_{2n+1}CHO$ (1 mark)

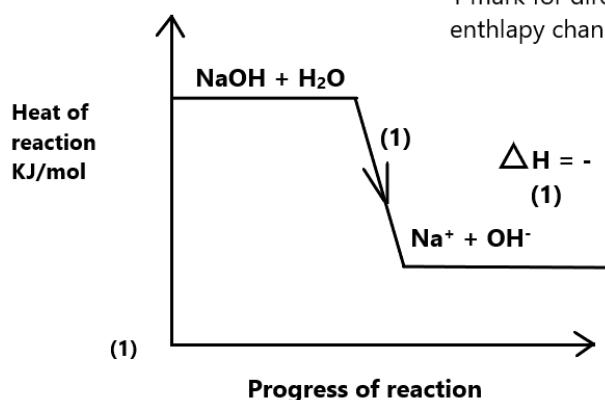
4. .

- f. Initial temperature: 25°C (1)

Compound	Final temperature (°C)	ΔT (final temperature – initial temperature)
Sodium hydroxide	65 (1)	40 (1)
Ammonium chloride	13 (1)	- 12 (1)

- g. Sodium hydroxide in water : Exothermic reaction (1)
 Ammonium chloride in water: Endothermic reaction (1)
- h. reaction of sodium hydroxide and water releases heat to the surrounding causing the temperature of the surrounding to increase while as in dissolution of ammonium chloride absorbs heat from the surrounding causing the temperature of the surrounding to decrease (1)
- i. .

1 mark for reactants and products
 1 mark for direction of arrow and enthalpy change



END OF MARKING KEY