NAME: SCORING GMUIDE 2025 INDEX

SCHOOL:MEBU EXAMINATIONS CONSULT

SIGNATURE:……

545/2
CHEMISTRY
PAPER 2 (PRACTICAL)
MOCK 2025
JULY/AUGUST
TIME:2 HRS

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MEBU EXAMINATIONS CONSULT

Uganda Certificate Of Education

MOCK ASSESSMENTS 2025

CHEMISTRY PAPER 2

(PRACTICAL)

TIME:2HRS

INSTRUCTIONS TO CANDIDATES

- This paper consists of **ONE** compulsory examination item.
- Answers **MUST** be written in the spaces provided. Use **blue** or **black** ink to write.
- **ALL** answers **MUST** be written in the spaces provided with clear working.
- Graph paper is provided for you in the paper.
- You are **not** allowed to use reference books like text books, and practical booklets.
- You are advised to **carefully** read the item, make sure you have all the apparatus and chemicals you may need and then plan appropriately before starting.

FOR ASSESSMENT USE ONLY		
	SCORES	EXAMINERS' INITIAL ONLY
1		
TOTAL	$\frac{X}{43}$	

ITEM ONE.

Katende often gets stomach pain every time he eats potato chips flavored with tomatoes. On enquiry, his doctor tell him its due to too much of acids in his stomach and recommends him taking an antacid which are out of stock in all the nearby health centers. However, it is known that antacids are made from alkali solutions but the investor dealing in manufacture of drugs needs to select an alkali for antacid production. The dilemma is choosing between **alkalis A** and **B** to minimize heat during the reaction with stomach acid.

You are provided with;

BA1 which is a solution of **Hydrochloric Acid.**

Alkali A and **Alkali B**

Any other apparatus that can be found a chemistry laboratory can be used.

Task;

As a student of chemistry, design and carry out an experiment to help the investor make the right choice. (In your report, include the following; aim, variables, hypothesis, procedures, risks and mitigation, conclusion and recommendation)

RESPONSES

AIM:

To determine which of the two alkali **A** or **B** produces less heat when reacted with solution **BA1**. **(2 Scores)**

Variables

Independent Variable: The type of alkali used (**A** or **B**).

Dependent Variable: The temperature change during the reaction. **(3 Scores)**

Controlled Variables: The volumes and concentrations of **BA1** and the alkalis.

Hypothesis

When Alkali **A** and **B** are reacted with equal volume of **BA1**, heat is released or reaction is exothermic. **(1 Score)**

Or

When equal volumes of **BA1** are reacted with Alkali **A** and Alkali **B** separately, different temperature rises are observed.

Materials and apparatus needed:

A plastic beaker (100ml)

Measuring cylinder (100ml)

Solution of **BA1**

Alkali **A**

Alkali **B**

Thermometer

Stop clock

(2 Scores)

Procedure:

1. 25 cm^3 of solution **BA1** was measured into a beaker using a measuring cylinder and the initial temperature was recorded.
2. 25 cm^3 of Alkali **A** was measured using a clean measuring cylinder.
3. Alkali **A** was added quickly into the beaker containing **BA1**, stirred gently.
4. The temperature of the mixture was recorded every 30 seconds until it became constant.
5. The apparatus was washed thoroughly with distilled water.
6. Steps 1–4 were repeated using 25 cm^3 of Alkali **B** instead of Alkali **A**.
7. All temperatures were recorded and the temperature changes calculated.

(8 Scores for Atleast 6/7 correct procedures)

Risks & Mitigation

1. Solution **BA_1** is corrosive thus goggles and gloves should be worn to avoid any burns and should be handled with care.
2. Spillages of the alkali and acids, this can be mitigated by cleaning the affected area immediately and rinsed with plenty of water. **(2 Scores)**

Tabulation of Results

Time (min)	Temp of BA_1 + Alkali A (°C)	Temp of BA_1 + Alkali B (°C)
0	25	25
0.5	32	28
1.0	36	30
1.5	39	31
2.0	40	32
2.5	40	32
ΔT (°C)	+15	+7

(14 Scores)

OR

Reaction with BA1	Initial Temp (°C)	Final Temp (°C)	ΔT (°C)	Observation
Alkali A	25	40	15	*Sharp rise in temperature*
Alkali B	25	32	7	*Gentle **fizzing**, small temp rise*

Results & Analysis

- *The reaction with Alkali A gave a bigger temperature rise of 15 ℃.*
- *The reaction with Alkali B gave a smaller temperature rise of 7 ℃.*

Amount of Heat Released

For Alkali A

ΔT = mc**ΔT; Where,** m is the mass of the solution, c is the specific Heat capacity, **ΔT**-the temperature change.

ΔT = -(25+25) x 4.2 x 15

= -3,150 joule

For Alkali B

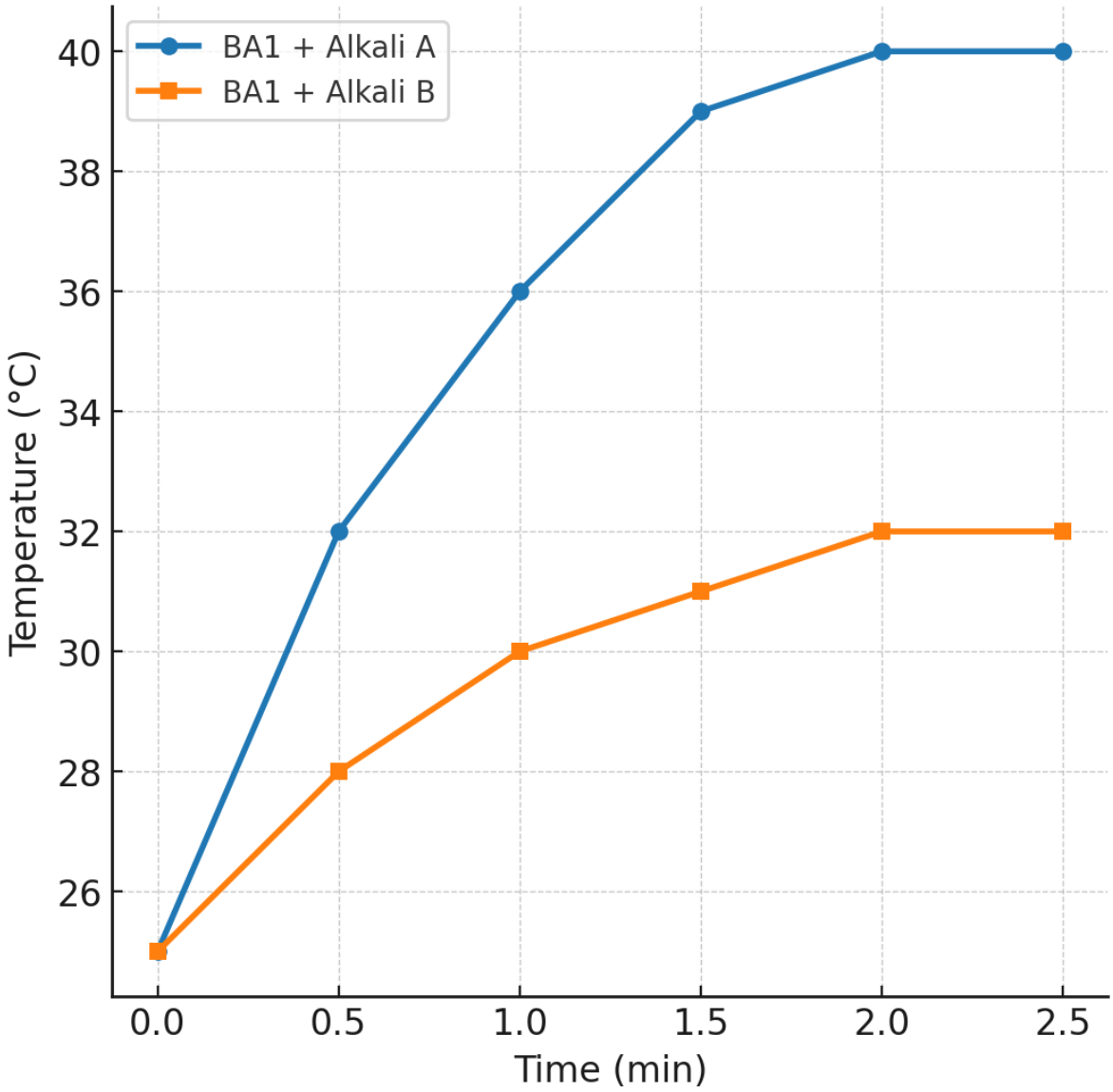
ΔT = mcΔT

- **ΔT = -(25+25) x 4.2 x 7** **(1 Scores)**

= -1,470 joules

Therefore; *Alkali B was better since it released less heat.*

A graph of Temperature against time



(8 Scores for Atleast 6 well plotted points)

Conclusion

- *Basing on the above results, Alkali B is the safer choice for making antacids because it caused a smaller temperature rise when neutralizing solution BA1.* **(1 Score)**

Recommendation

- *From the results and analysis, I recommend the investor to use Alkali B in the manufacture of antacids.* **(1 Score)**

END