# UGANDA ADVANCED CERTIFICATE OF EDUCATION
# CHEMISTRY PRACTICALS
## PAPER 2
## S6 MID TERM I EXAMS 2026
## TIME: 2:30 Hours

**INSTRUCTIONS TO CANDIDATES:**

This paper consists of two compulsory items.

Attempt all the items.

Write your responses to the spaces provided.

| CODE | ITEM 1 | ITEM 2 | Examiner's signature & No. |
|---|---|---|---|
| A | | | |
| H | | | |
| V | | | |
| P | | | |
| R | | | |
| Er | | | |
| A/I | | | |
| C | | | |
| Rec | | | |
| Total Weighted Score | | | |

# Item 1: (Physical chemistry Part)

A small scale cosmetic industry uses compounds that are basic in nature to make quality products for commercial consumption. The factory manager has ordered compound **Q** to be used in a formulation for a hair shampoo product. The process of manufacturing the hair shampoo requires knowledge of the exact molecular mass of the basic compound Q which will help the cosmetic factory make a better high quality shampoo for their clients before they can work out other ingredient amounts.

The supplier of compound **Q** claims that the molecular mass of the compound is estimated to be about 80. The cosmetic factory management however, wants to verify the claim, but do not know how to go about it, and yet they need to know the exact molar mass of Q before they can use it. You have been contacted to help.
You will help determine the exact molecular mass of **Q** using the solution of hydrochloric acid labeled **FA1** and use it to verify the supplier's claims.

You are provided with about **2.0g** of a basic compound **Q,and;**
**FA1** which is a 0.15M hydrochloric acid and other Laboratory apparatus;
The reaction between **Q** and hydrochloric acid requires the use of methyl orange as the indicator.

**Theory**
The reaction between **Q** and hydrochloric acid shows that 1 mol of **Q** requires 2 moles of hydrochloric acid for complete neutralization
(Mole ratio of solid **Q : HCl** is **1:2**)

**Task;**
As a learner of Chemistry
a) Design and carry out a scientific investigation to verify or deny the claims of the Supplier of compound Q and advice the cosmetic Business.
(Your design should Include; *Aim, hypothesis, Variables, materials, Procedures, Risks and mitigations, Errors and their management)*

b) Analyze your results and verify whether the estimated Molecular mass is the exact mass the cosmetics business needs to use. (05Scores)

## Item 2: (Inorganic Chemistry part)

A battery recycling facility in Rakai district has received a shipment of a green crystalline substance labeled “solid **C’’** suspected to be a by-product from processing copper – metal hydride (CuMH) batteries. The facility manager needs to confirm the ionic composition of substance **C** to ensure it can be safely processed for reuse in manufacturing or disposed of according to environmental regulations. As a chemistry student, you have been tasked with analyzing substance “C” to identify its ions, which are expected to include **two cations** and **two anions.** Your findings will help the facility determine whether substance “C” is suitable for recycling or requires special handling due to potential environmental hazards.

**Task**

Design and carry out a qualitative analysis of substance **C** to determine its ion composition, suspected to contain two cations and two anions. Record your tests, observations, and deductions in a suitable table, deduce the ions present, and provide a recommendation to the recycling facility based on your findings.

# END

**The Secret of success without Hard Work is Still a secret....(Beware;** work hard for the best**)**

**Remembr: "The Fear of God is the beginning of Wisdom" (Proverb 1:7)**

# *Confidential*

*In addition to the Laboratory Reagents provided, each candidate should be provided with the following*

- *250cm$^3$ volumetric flask (1)*
- *25cm$^3$ pipette and pipette filler (1)*
- *250cm$^3$ conical flask (1-3)*
- *Retort stand and clamp (1)*
- *Plastic Funnel (1)*
- *100cm$^3$ beaker for dissolving solid* **Q**
- *50cm$^3$ burette (1)*
- *Glass stirring rod (1)*
- *Spatula and weighing boat/filter paper*
- *Wash bottle /plastic cup/beaker filled with distilled water*
- *White tile/White paper for clear end-point visibility*
- *Dropper*
- *Orange indicator*
- *2.0g of Solid Q in a petri-dish*
- *Weighing scale*
- *0.15MHCl (Prepared by dissolving 12.9cm$^3$ of stock Hydrochloric acid)*
- *3g of Soli C ($CuCO_3$ + $ZnSO_4$ mixed in the ratio of 1:2)*
- *Test tubes (8) + Test tube rack*
- *Source of Heat*
- *Test tube holders for heating*
- *Litmus papers (Red and Blue)*
- *Filter Paper (1)*

***NB: The information should not be exposed to the candidate.***

**END**

**Blessings**