

Name

Sign

Random No.						Personal No.		

(Do not write your school/Centre Name or Number anywhere on this booklet)

545/3
CHEMISTRY
(PRACTICAL)
Paper 3
Jul/Aug 2023
2 hours



BUSOGA REGION JOINT EXAMINATION BOARD

Uganda Certificate of Education

CHEMISTRY PRACTICAL

Paper 3

INSTRUCTIONS TO CANDIDATES

Answer **both** questions. Answers are to be written in the spaces provided in this booklet

All your working **must** be in **blue** or **black** ink. Any work done in pencil **except** drawings will **not** be marked

You are **not** allowed to use any reference books (i.e. text books, booklets on qualitative analysis etc.)

All working **must** be clearly shown

Mathematical tables and silent non-programmable calculators may be used

For Examiner's Use Only		
Q.1		
Q.2		
Total		

TURN OVER

1. You are provided with the following ;

BA1, which is a solution made by dissolving 2.5g of basic salt, **KHX** in 250cm³ of solution.

BA2 which is a 0.1M hydrochloric acid.

You are required to determine the relative formula mass of **X** in the salt.

Procedure

Pipette 25cm³ (or 20cm³) of BA1 into a conical flask. Add 2 – 3 drops of methyl orange indicator and titrate with BA2 from the burette.

Repeat the titration until you obtain consistent results.

Record your result in the table below.

Volume of pipette usedcm³ (0 ½mark)

Final burette reading (cm ³)			
Initial burette reading (cm ³)			
Volume of BA2 used (cm ³)			

Titre values of BA2 used for average

(7½mrks)
(01mrk)

Average volume of BA2 used.

(2½ marks)

Questions

(a) Calculate

(i) Number of moles of hydrochloric acid that reacted.

(1½mrk)

hydrochloric acid and KHX is 1:1)

(1½ marks)

Revised observations and deductions in the table below

(iii) Number of moles of KHX in 250cm^3 of BA-1

(03 marks)

(b) Determine the relative formula mass of X in KHX. (K = 39, H = 1) (5½ marks)

2. You are provided with substances **Q**, which contains two cations and one anion. Carry out the following tests to identify the cations and anion present in **Q**. Identify any gas(es) that may be evolved.

Record your observations and deductions in the table below

(27 marks)

	TESTS	OBSERVATIONS	DEDUCTIONS
(a)	Heat a spatula end full of Q in a dry test tube strongly until no further change		
(b)	To two spatula end full of Q add about 5cm ³ of water and shake to dissolve. Add sodium hydroxide solution drop wise until no further change and filter, keep both the filtrate and residue		
(c)	To the filtrate, add dilute nitric acid until the solution is just acidic. Divide the solution into five portions.		
(i)	To the first portion of the acidified solution, add sodium hydroxide drop wise until in excess		

(ii)	To second portion of acidified solution, add ammonia solution drop wise until in excess.		
(iii)	To third portion of acidified solution, add potassium iodide solution.		
(iv)	To the fourth portion of the acidified solution, add lead (II)nitrate solution		
(v)	Use the fifth portion of the acidified solution to carry out test of your own to confirm the anion in Q Test		
(d)	Dissolve the residue in minimum amount of dilute sulphuric acid and divide the resultant solution into three parts		

(i)	To the first part of the solution add sodium hydroxide solution drop wise until in excess .			(ii)	To the second part of the solution add sodium hydroxide solution drop wise until in excess .
(ii)	To the second part of solution , add aqueous ammonia solution drop wise until in excess .			(iii)	To the third part of the solution add aqueous ammonia solution drop wise until in excess .
(ii)	To the third part of the solution add magnesium ribbon and leave to stand			(iv)	To the fourth part of the solution add magnesium ribbon and leave to stand

(e) (i) The cations in Q are

(ii) The anion in Q is

END