Name.....Center/Index Number...../.....

545/3
CHEMISTRY
PRACTICAL
Paper 3
2023
2 hours

AITEL JOINT MOCK EXAMINATION

Uganda Certificate of Education

CHEMISTRY PRACTICAL
Paper 3

2 hours

INSTRUCTIONS TO CANDIDATES:

- *Answer **All** questions.*
- *Answers are to **be written** in the spaces provided.*
- *You **are not** allowed to use any reference books.*
- *All working must be clearly shown.*
- *Mathematical tables, slide rules and non-programmable silent electronic calculators may be used.*

For Examiner's use only

Q1	Q2	TOTAL

1. You are provided with the following:
BA1; which is a solution containing 16.5g of an impure compound, H in 1 litre.
BA2, which is 0.1M hydrochloric acid.

You are required to determine the percentage purity of H in the compound.

Procedure:
Pipette 25cm^3 (or 20cm^3) of BA1 into a clean conical flask. Add 2-3 drops of phenolphthalein indicator and titrate with solution BA2 from the burette.

Repeat the titration 2-3 times until you obtain consistent results.
Enter your results in the table below
Results:
Table:

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

Titre values for calculating average volume of
BA2…….cm^3
∴ Average volume of BA2 used ……cm^3

Questions:
(a) Calculate the number of
(i) moles of hydrochloric acid in BA2 that reacted.

(ii) moles of H in $1dm^3$ of solution BA1 (1 mole of H reacts with 2 moles of HCl)

(b) Calculate the mass of pure H in the compound. (Rfm H = 292)

(c) Determine the percentage purity of H in the compound

2. You are provided with substance Y which contains <u>two</u> cations and <u>one</u> anion. You are required to carry out the following tests on Y to identify the cations and anion in Y. Identify any gas(es) evolved. Record your observations and deductions in the table below.

TESTS	OBSERVATIONS	DEDUCTIONS
(a) Heat <u>one</u> spatula endful of Y strongly in a dry test tube.		

(b) Shake two spatula endfuls of Y with about $3cm^3$ of water and to the mixture, add dilute ammonia solution drop-wise until in excess. Filter and keep both the filtrate and residue.		
(c) To the filftrate, add dilute nitric acid drop-wise until the solution is just acidic and divide the acidified solution into <u>five</u> parts.		
(i) To the first part of the acidified filtrate, add 2-3 drops of lead(II) nitrate solution		
(ii) To the second part of the acidified filtrate, add 2-3 drops of silver nitrate solution.		
(iii) To the third part of the acidified filtrate, add 2-3 drops of barium nitrate solution.		
(iv) To the fourth part of the acidified filtrate, add dilute		

sodium hydroxide solution drop-wise until in excess.		
(v) To the fifth part of the acidified filtrate, add ammonia solution drop-wise until in excess		
(d) Wash the residue with water and dissolve it in dilute Sulphuric acid		
Divide the acidic solution into three parts. (i) To the first part of the solution, add dilute sodium hydroxide drop-wise until in excess.		
(ii) To the second part of the solution, add ammonia solution drop-wise until in excess.		
(iii) To the third part of the solution, add 2-3 drops of potassium iodide solution		

(e) Identify the

(i) cations in Y_____and _____

(ii) anion in Y_____