NAME.....

Class & Class no..... Sign.....

NYABURURU GIRLS' NATIONAL SCHOOL
Our Lady of lourdes

Date done.....
Name of invigilator.....
Date returned.....
Date revised.....

233/3
CHEMISTRY
PAPER 3
Practical
February Series -2016
TIME: $2^{1}/_{4}$HRS

INSTRUCTIONS TO CANDIDATES:

- *Write your **Name**, **class and number**, in the spaces provided above.*
- *Answer all the questions in the spaces provided.*
- *All working **MUST** be clearly shown where necessary.*
- *Mathematical tables and electronic calculators may be used.*

For Examiner's Use Only:

QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
1	15	
2	17	
3	8	
TOTAL SCORE	40	

This paper consists of 5 printed pages. Candidates should check to ascertain that all papers are printed as indicated and that no questions are Missing

1. **You are provided with the following**
   -1.0M Hydrochloric acid; solution T
   -0.5M sodium hydroxide; solution S
   Anhydrous sodium carbonate of unknown mass; solid V

   You are required to determine the mass of sodium carbonate that was used in the experiment.

Procedure

Measure $60cm^3$ portion of 1M hydrochloric acid using a measuring cylinder and transfer it to $100cm^3$ beaker. Add all sodium carbonate (Solid V) to the acid in the beaker and stir gently. Leave the mixture for 3 minutes until there is no effervescence. Transfer the mixture into a clean 100ml-measuring cylinder and add distilled water to make $100cm^3$ of the solution.

Transfer all the solution into $250cm^3$ beaker and shake well. Label this solution W.

Fill the burette with solution S.

Pipette $25.0cm^3$ of solution W and transfer to a conical flask. Add 2-3 drops of phenolphthalein indicator and titrate with solution S. record your results in table I below.

Repeat the titration to get two more concordant values.

Number of experiment	I	II	III
Final burette reading (cm^3)			
Initial burette reading (cm^3)			
Volume of solution S used (cm^3)			

(4mks)

(b) Determine the average volume of solution S used (1mk)

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(c) Calculate the number of moles of sodium hydroxide (Solution S) used. (2mks)

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(d) Find the number of moles of hydrochloric acid in 25.0cm^3 of solution W. (2mks)

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e). Determine the number of moles of hydrochloric acid in 100cm^3 of solution W (2mks)

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(f) Calculate the number of moles of hydrochloric acid in the original 60cm^3 of solution (1mk)

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(g) Calculate the number of moles of hydrochloric acid that reacted with sodium carbonate (1mk)

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(h) Determine the mass of sodium carbonate that reacted with the acid (Na=23, C=12, O=16) (2mks)

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2. You are provided with solid Z. Carry out tests below. Record your observations and inferences in the spaces provided.

(a) Place solid Z in a test tube add about 10cm^3 of distilled water and shake to dissolve. Divide the resultant solution into 6 portions and use them for tests below

Observations	**Inferences**
(1 mk)	(1 mk)

(i) To the first portion add dilute sodium hydroxide drop wise until in excess

Observations	**Inferences**
(1mk)	(1mk)

(ii) To the second portion add aqueous ammonia drop wise until in excess

Observations	Inferences
(1mk)	(1mk)

(iii) To the third portion add a few drops of dilute hydrochloric acid and warm to almost boiling

Observations	Inferences
(2mk)	(1mk)

(iv) To the fourth portion add a few drops of barium chloride solution

Observations	Inferences
(2mk)	(1mk)

(v) To the fifth portion add drops of potassium iodide solution until in excess

Observations	Inferences
(1mk)	(1mk)

(vi) To the sixth portion add a few drops of sodium sulphate solution

Observations	Inferences
(2mk)	(1mk)

3. You are provided with solid M. Carry out the tests below. Write your observations and inferences in the spaces provided.

(i) To half of the solid M provided, put in a clean dry test tube, heat gently then strongly.

Observations	**Inferences**
(1 mk)	(1 mk)

(ii) Put the remaining solid into a boiling tube and add about $10cm^3$ of distilled water, shake thoroughly.

I. To about $2cm^3$ of the solution M, add 3 drops of bromine water.

Observations	**Inferences**
(1 mk)	(1 mk)

II. To about $2cm^3$ of solution M, add 3 drops of acidified potassium dichromate (VI), then gently warm.

Observations	**Inferences**
(1 mk)	(1 mk)

III. To about $2cm^3$ of solution M, add two drops of the universal indicator.

Observations	Inferences
(1 mk)	(1 mk)

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