CHEMISTRY PRACTICAL

FORM 3

TIME: 1 HOUR 30MINS.

NAME……ADM……DATE……..

Instruction to candidate.

Attempt all the questions

The paper has a maximum score of **30 marks**.

1. You are provided with:-

- Solution A, Hydrochloric acid.
- Solution B, 0.024 M Sodium hydroxide.
- Solution C, containing 15.74g of Na_2CO_3. x H_20 in 250ml of the solution.

You are required to:-

(a) Prepare a dilute solution of the hydrated sodium carbonate, C.

(b) Determine:-

(i) The concentration of solution A.

(ii) The value of x in the carbonate.

Procedure a

- Using a pipette place 25.0 cm^3 of solution C into a 250ml volumetric flask.
- Add about 200cm^3 of distilled water. Shake well.
- Add more distilled water to make upto the mark.
- Label this solution D.
- Retain solution D for use in procedure b and c.

Procedure b

- Fill a burette with solution A.
- Using a clean pipette and pipette filler, place 25.0 cm^3 of solution B into a 250ml conical flask.
- Add two drops of phenolphthalein indicator and titrate with solution A.
- Record your results in table 1.
- Repeat the titration two more times and complete the table.

Table 1

	I	II	III
Final burette reading (cm3)			
Initial burette reading(cm3)			
Volume of solution A (cm^3) added			

(4 marks)

(a) Determine the:-

(I) Average volume of solution A used. (show your working) (2marks)

(II) Number of moles of sodium hydroxide in 25cm^3 of solution B used. (1 mark)

(III) Number of moles of acid in volume of solution A used. (2marks)

(IV) Concentration of solution A in moles per litre. (2marks)

Procedure C

- Fill the burette with solution A. Using a pipette, pipette 25.0cm^3 of solution D into a conical flask. Add 2 drops of methyl orange indicator and titrate with solution A.
- Record your results in the table.
- Repeat the titration two more times and complete the table.

Table 2

	I	II	III
Final burette reading			
Initial burette reading			
Volume of solution A (cm^3) added			

(4 marks)

(b) (i) Determine the:-

(I) Average volume of solution A used. (2marks)

(II) Moles of the acid in the average volume of solution A used. (2marks)

(III) Concentration in grams per litre of the carbonate in solution C. (2marks)

(ii Write an equation for the reaction that occurred between the acid and the carbonate (1mark)

(iii) Determine:-

(I) number of moles of the carbonate in 25cm^3 of solution D used. (2 marks)

(II) Number of moles of carbonate in 250cm^3 of solution D. (2 marks)

(III) Concentration of solution C in moles per litre. (2marks)

(IV) Value of x in $Na_2CO_3.xH_2O$. (H= 1.0, C = 12.0, O = 16.0 Na = 23.0) (2 marks)