NAME ……..…….. **DATE** ……

INDEX NO. …….…….……...…..… **SIGNATURE** ……..……..

233/3
CHEMISTRY
PRACTICAL
PAPER 3
JULY/AUGUST, 2014
TIME: 2¼ HOURS.

MAKINDU DISTRICT INTER – SECONDARY SCHOOLS EXAMINATION

Kenya Certificate of Secondary Education.

233/3
CHEMISTRY
PAPER 3
PRACTICAL
TIME: 2¼ HOURS.

INSTRUCTIONS TO CANDIDATES.

- Write your name and index number in the spaces provided above.
- Sign and write the date of exam in the spaces above.
- Answer **ALL** the questions in the spaces provided.
- You are not allowed to start working with the apparatus for the first 15 minutes of the 2¼ hours allowed time for the paper.
- Use the 15 minutes to read through the question paper and note the chemicals you require
- Mathematical tables and electronic calculators may be used.
- All working **MUST** be clearly shown where necessary.
- This paper consists of 6 printed pages. Candidates should check to ensure that all pages are printed as indicated and no questions are missing

FOR EXAMINER'S USE ONLY.

Question	Maximum score	Candidate's score
1	18	
2	12	
3	10	
Total score	40	

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Question 1

You are provided with:

- Dilute hydrochloric acid solution A
- 0.1m sodium hydroxide solution B
- 10g of a mixture of sodium hydrogen carbonate and sodium chloride per litre, solution C

You are required top determine;

(i) Molarity of solution A

(ii) Percentage purity by mass of sodium hydrogen carbonate

PROCEDURE 1

Fill the burette with solution A. Pipette 25cm3 of 0.1M sodium hydroxide solution B into a clean conical flask and add 2 drops of methyl orange indicator and titrate with solution A until a permanent pink colour occurs. Fill in the table below. Repeat the titration two more times and complete the table below.

TABLE I

	1	2	3
Final burette reading (cm^3)			
Initial burette reading (cm^3)			
Volume of solution A used (cm^3)			

(4 Marks)

(a) Calculate the average volume of solution A used. (1 Mark)

……

……...

(b) Calculate the number of moles of hydrochloric acid solution A that reacted with 25cm3 of sodium hydroxide solution B. (2 Marks)

……

……...

(c) Calculate the concentration of solution A in moles per litre (1 Mark)

……

……...

……

……...

PROCEDURE II

Pipette 25cm3 of solution C into a conical flask, Titrate with solution A using 3 drops of methyl orange indicator. Record your results in table II below.

TABLE II

	1	2	3
Final burette reading (cm^3)			
Initial burette reading (cm^3)			
Volume of solution A used (cm^3)			

(4 Marks)

(a) Calculate the average volume of solution A used. (1 Mark)

……

……...

……

……...

(b) Write an ionic equation for the reaction taking place between solution A and mixture C. (1 Mark)

……

……...

(c) Calculate:

(i) Molarity of sodium hydrogen carbonate in moles per litre (2 Marks)

……

……...

……

(ii) Mass of sodium hydrogen carbonate in moles per litre (1 Mark)

……

……...

……

……...

(iii) Mass of sodium chloride in the mixture (1 Mark)

……

……...

2. (I) You are provided with solid F. Carry out the following tests and write down all the observations and Inferences.

(a) Place half spatula end full of solid F in a dry test tube. Heat gently then strongly until there is no further change. Test gas using a glowing splint.

Observations	Inferences
(1 mark)	(1 mark)

(b) Place the remaining solid F in a test tube, add about $10cm^3$ of distilled water and shake vigorously. Divide the mixture into three portions.

(i) To the first portion, add 2M sodium hydroxide solution drop wise until in excess.

Observations	Inferences
(1 mark)	(1 mark)

(ii) To the 2nd portion, add ammonia solution dropwise till in excess.

Observations	Inferences
(1 mark)	(1 mark)

(iii) To the 3rd portion, add 4 drops of solution chloride

Observations	Inferences
(1 mark)	(1 mark)

II

You are provided with liquid K, carry out the following tests on it.

(a) Place about one spatula end full of liquid K on a metallic spatula and ignite it in a Bunsen burner flame.

Observations	Inferences
(1 mark)	(1 mark)

(b) To 2cm3 of liquid K add 3 drops of acidified $KMnO_4$ solution.

Observations	Inferences
(½ mark)	(½ mark)

(c) To 2cm3 of liquid K, add 3 drops of acidified $K_2Cr_2O_7$.

Observations	Inferences
(½ mark)	(½ mark)

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

(a) Put about one half of solid E in a dry test tube and heat it strongly. Test for any gas produced using litmus paper.

Observations	Inferences
(2 mark)	(2 mark)

(b) Dissolve the rest of the solid E in 10cm3 of distilled water in boiling tube. Divide solution into 3 portions.

(i) To a first portion in test-tube, add aqueous sodium hydroxide dropwise until in excess.

Observations	Inferences
(1 mark)	(1 mark)

(ii) To the second portion in test tube, add aqueous ammonia solution dropwise until in excess.

Observations	Inferences
(1 mark)	(1 mark)

(iii) To the third portion in a test-tube, add lead (II) nitrate solution and then warm the mixture.

Observations	Inferences
(1 mark)	(1 mark)

ANSWERS:

Order a copy of answers from www.schoolsnetkenya.com/order-e-copy

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