Name…… …….…… Index No:……..

233/3
CHEMISTRY
PAPER 3
PRACTICAL
JULY/AUGUST - 2014
TIME: 2 ¼ HOURS

Candidate's Signature ……..……
Date……..

RACHUONYO SOUTH SUB-COUNTY JOINT EVALUATION EXAM

Kenya Certificate of Secondary Education (K.C.S.E.)

233/3
Chemistry
Paper 3
2 ¼ Hours

INSTRUCTIONS TO CANDIDATES

- Write your **name** and **index number** in the spaces provided.
- **Sign** and write the **date** of examination in the spaces provided.
- Answer ***all*** the questions in the spaces provided in the question paper.
- You are not allowed to start working with the apparatus for the first 15 minutes of the 2 ¼ hours allowed for this paper. This time is to enable you to read the question paper and make sure you have all the chemicals and apparatus you need.
- All working **must** be clearly shown where necessary.
- Mathematical tables and electronic calculators may be used.

For examiners use only

Question	Maximum Score	Candidate's Score
1	19	
2	15	
3	06	
Total	40	

This paper consists of 6 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

Question 1 (20marks)

You are provided with;

- Solid **A** in a boiling tube
- Solution **B**, sodium hydroxide
- 0.125M.monobasic acid, solution **C**

You are required to;

(i) Determine molarity of solution **B**

(ii) Determine solubility of solid **A**

Procedure I

(i) Using a measuring cylinder ,place 50cm^3 of solution **B** into an empty 250ml beaker. Add 100cm^3 of distilled water to the solution. Labe this solution as solution **D**.

(ii) Fill the burette with solution **C**

(iii) Using pipette filler, place 25cm^3 of solution d into a 250ml conical flask. Add two drops of phenolphathatlein indicator.

(iv) Titrate solution **D** with solution **C**

(v) Record your results in table 1 . repeat the titration two more times and complete table 1.

	I	II	III
Final burette reading (cm^3)			
Initial burette reading (cm^3)			
Volume of solution **C** used (cm^3)			

(4mks)

(a) (i) Calculate average volume of solution **C** used. (1mk)

(ii) Calculate moles of solution **C** used in the experiment. (1mk)

(iii) Calculate moles of solution **D** used. (1mk)

(iv) Calculate molarity of solution **D** (1mk)

(v) Calculate molarity of solution **B**. (2mks)

Procedure II

(i) Using measuring cylinder add 20cm^3 of distilled water to solid **A** in the boiling tube. Suing a glass rod, stir the mixture thoroughly for about three minutes.

(ii) Filter the mixture obtained into a dry 250ml volumetric flask. Label the filtrate solution **A**.

(iii) Clean the burette and fill it with solution **A**.

(iv) Using a pipette and pipette filler, place 25cm^3 of solution **D** into a 250ml conical flask . Add two drops of phenolphthalein indicator.

(v) Titrate solution **D** with solution **A**. record your results in table 2

(vi) Repeat the titration two more times and complete table 2.

Table 2

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

(4mks)

(b) Calculate;

(i) Average volume of solution **A** used (1mk)

(ii) Moles of solution **D** used (1mk)

(iii) Moles of solution **A** used given that 2 moles of solution A requires 1 mole o f solution **D** for complete neutralization (1mk)

(iv) Solubility o solid A given that density of the solution formed is 1g/cm^3 and RFM of **A** = 126. (2mks)

2 You are provided with solid **D**. perform the following test and write the observations and inferences.

(a) Place solid **D** into a boiling tube and add 10cm3 of distilled water. Shake the boiling tube and filter. Keep the residue for test (b). Divide the filtrate into four portions.

Observation	**Inferences**
(1mk)	(1mk)

(i) To the first portion, add sodium hydroxide dropwise until in excess.

Observation	**Inferences**
(1mk)	(1mk)

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

Observation	Inferences
(1mk)	(1mk)

(iii) To the third portion, add a few drops of Lead(II) nitrate solution

Observation	Inferences
(½ mk)	(½ mk)

(iv) To the fourth portion, add a few drops of barium nitration solution followed by dilute nitric (v) acid.

Observation	Inferences
(1 mk)	(1mk)

(b) Place the residue into attest tube and add $10cm^3$ of dilute nitric (v) acid and shake until the solid dissolves.

Observation	Inferences
(½ mk)	(½ mk)

(i) To the first portion, add sodium hydroxide dropwise until in excess.

Observation	Inferences
(1 mk)	(1mk)

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

Observation	Inferences
(1 mk)	(1mk)

(iii) To the third portion, add a few drops of sodium sulphate solution.

Observation	Inferences
(½ mk)	(½ mk)

3. You are provided with solid L . Carry out the tests below and record your observation and inferences in the space provided.

(a) Heat half spatula of solid L in a non-luminous flame of aBunsen burner.

Observation	Inferences
(1 mk)	(1mk)

(b) Add 5cm^3 of distilled to the remaining solid L and shale well. Divide the solution into two portion.
(i) To the first portion, add a few drops of acidified potassium manganate (VII) and warm

Observation	Inferences
(1 mk)	(1mk)

(ii) To the second portion, add a quarter spatula and fill of sodium hydrogen carbonate.

Observation	Inferences
(1 mk)	(1mk)