Name …….……. Index No…….…….

School ……... Candidate's Signature ……

Date …….....……..

233/3
CHEMISTRY
PAPER 3
(PRACTICAL)
JULY / AUGUST
2– HOURS

LOWER YATTA DISTRICT JOINT EVALUATION EXAM - 2011

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

233/3
CHEMISTRY
PAPER 3
(PRACTICAL)
JULY / AUGUST
2– HOURS

INSTRUCTIONS:

- Answer **ALL** questions in the spaces provided.
- You are **NOT** allowed to start working with the apparatus for the first 15minutes of the 2– hours. allowed for this paper. This time will enable you read through the question paper and make sure you have all the chemicals and apparatus required.
- Mathematical tables and electronic calculators may be used.
- All working **must be** clearly shown where necessary.

FOR EXAMINER'S USE ONLY

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

This paper consists of 7 printed pages
Candidates should check to ensure that all pages are printed as indicated and no questions are missing

 Turn Over

1. You are provided with.
   - Metal Q – Magnesium ribbon.
   - Hydrochloric acid – solution A.
   - 0.47M Sodium hydroxide – Solution B.

You are required to:

i) Determine the rate of reaction between metal Q and solution A.

ii) Determine the concentration of solution B in moles for litre.

Procedure I

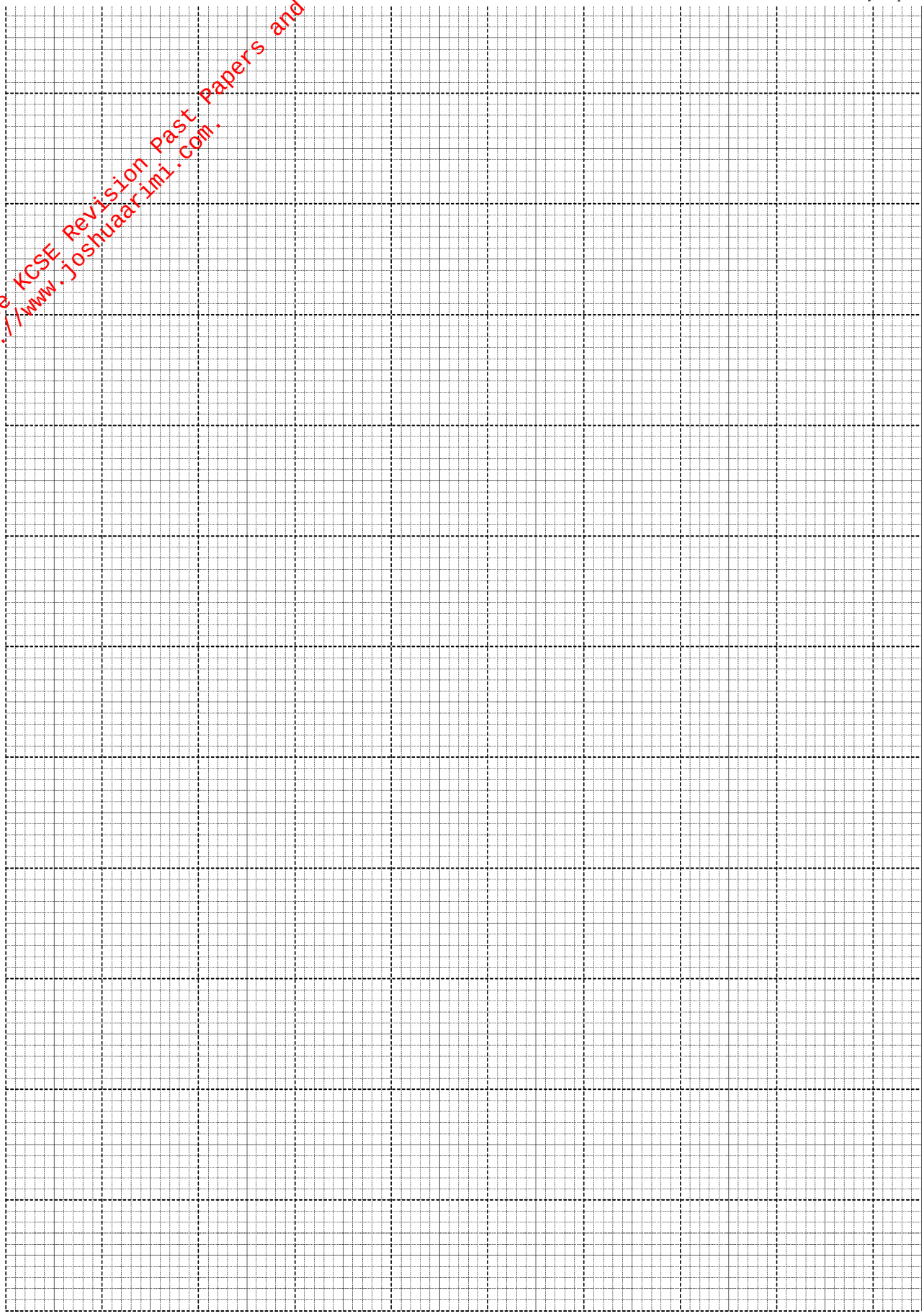
- Place five test tubes in a test tube rack and label them 1, 2, 3, 4 and 5.
- Using a measuring cylinder, measure out volumes of hydrochloric acid as shown in the table and pour into the test tubes.
- Cut out five pieces of 1cm long of solid Q.
- Place one piece of Magnesium into test-tube one and start a stop watch immediately.
- Record the time taken in the table below.
- **Do not** pour the solutions in the test-tubes away for use in Procedure II.

a) Table I

Test tube number	1	2	3	4	5
Volume of solution A	10	9	8	7	6
Volume of water (cm^3)	0	1	2	3	4
Time taken (sec)					
Rate of reaction – (sec^{-1})					

(5 Marks)

ii) Plot a graph of rate of reaction (Y-axis) against volume of solution A. (3 Marks)



iii) From the graph determine the time taken for 1cm magnesium ribbon to react completely if volume of acid used is $7.5cm^3$. (2 Marks)

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iv) In terms of rate, explain the shape of the graph. (1 Mark)

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Procedure II

- Transfer all the contents in the five test-tubes into a volumetric flask. Add water upto 250 millilitre mark. Label this solution F.
- Pipette $25cm^3$ of solution F. Add 2 – 3 drops of phenolphthalein indicator. Titrate with sodium hydroxide from a burette.

  Record your results in the table below.

	1	2	3
Final burette reading (cm^3)			
Initial burette reading (cm^3)			
Titre (cm^3)			

(3 Marks)

b) i) Calculate the average volume of solution B used. (1 Mark)

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ii) Calculate number of moles of solution B used. (1 Mark)

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iii) Calculate moles of solution A used. (1 Mark)

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iv) Calculate moles of solution A per dm^3. (1 Mark)

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2. You are provided with solid P. Carry out tests below and record your observations and inferences.

Divide P in two portions.

a) Heat portion one in a dry test tube strongly.

Observations	Inferences
(1 Mark)	(1 Mark)

b) i) Put portion two in a boiling tube. Add $10cm^3$ of distilled water. Shake and keep the solution.

Observations	Inferences
(1 Mark)	(1 Mark)

ii) Put $2cm^3$ of solution in a test tube. Add 3 drops of barium Nitrate.

Observations	Inferences
(1 Mark)	(2 Marks)

iii) To 2cm^3 of solution of solution in a test tube add sodium hydroxide dropwise until in excess.

Observations	Inferences
(1 Mark)	(2 Marks)

iv) To 2cm^3 of solution in a test tube add 6 drops of bromine water

Observations	Inferences
(1 Mark)	(1 Mark)

3. You are provided with solid R. Use it to carry out tests shown below.

   a) Dissolve about ½ spatula end full in 10mls of water in a boiling tube. Divide into four portions.

      i) To portion one add 3 – 4 drops of bromine water.

Observations	Inferences
(1 Mark)	(1 Mark)

ii) To portion two add Sodium Carbonate powder.

Observations	Inferences
(1 Mark)	(1 Mark)

iii) To portion 3 add 2 – 3 drops of acidified potassium manganate (vii).

Observations	Inferences
(1 Mark)	(2 Marks)

iv) Heat some of solid R in a dry clean spatula.

Observations	Inferences
(2 Marks)	(1 Mark)