NAME…….. **INDEX NO:……**

CANDIDATE'S SIGNATURE…….. **DATE……..**

233/3
CHEMISTRY
PRACTICAL
Paper 3
JULY/AUG. 2010
Time: 2 ¼ HRS

BUTERE DISTRICT JOINT EVALUATION TEST – 2010
Kenya Certificate of Secondary Education (K.C.S.E)

233/3
CHEMISTRY
PRACTICAL
Paper 3
JULY/AUG. 2010
Time: 2 ¼ HRS

INSTRUCTIONS TO CANDIDATES

Write your name and Index No. in the spaces provided above.
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 read the question paper and make sure you have all the chemicals and apparatus that you may need.
All working must be clearly shown where necessary. Mathematical tables and silent electronic calculators may be used.

EXAMINERS USE ONLY

QUESTION	MAXIMUM SCORE	CANDIDATES SCORE
1	14	
2	12	
	14	
Total	40	

This paper consists of 8 printed pages. Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing

1. You are provided with;

- Sodium hydroxide solution labeled K
- Solution L, 30g of acid L per litre of solution.

You are required to determine the relative formula mass of acid L.

Procedure:

Using a burette, transfer 25.0cm^3 of solution K into a 100 ml beaker. Measure the temperature, T_1 of solution K and record it in table I. Pipette 25.0cm^3 of solution L into another 100ml beaker. Measure the temperature T_2 of solution L and record it in table I. Add all the solution K at once to solution L. Stir carefully with the thermometer. Measure the highest temperature T_3, of the mixture and record it in table I. Repeat the procedure and complete table I

Table I

	I	II
Initial temperature of solution K, T, (^{0}C)		
Initial temperature of solution L, T_2 (^{0}C)		
Highest temperature of mixture T_3 (^{0}C)		
Average initial temperature (^{0}C)		
Change in temperature ΔT (^{0}C)		

(5mks)

Calculate;

i) Average ΔT value (1mk)

ii) Heat change for the reaction
(Assume density of the solution = 1g/cm^3 and specific heat capacity is 4.2$Jg^{-1}K^{-1}$) (2mks)

iii) Number of moles of acid L used given that the heat change for one mole of acid L reacting with sodium hydroxide solution is 134.4kJ. (2mks)

iv) Concentration of acid L in moles per litre (2mks)

v) Relative formula mass of acid L (2mks)

2. You are provided with

- Magnesium ribbon labeled solid D
- 2.0M Hydrochloric acid labeled solution F
- A stop watch

You are required to determine the rate of reaction between magnesium and Hydrochloric acid at Different concentrations.

Procedure:

i) Place five test tubes in a test tube rack and label them 1, 2, 3, 4 and 5. Using a $10cm^3$ measuring cylinder, measure out the volume of 2.0M hydrochloric acid solution F as shown in the table II below. Pour into the corresponding test tubes.

ii) Cut out five pieces each exactly 1cm long of Magnesium ribbon, solid D.

iii) Transfer all the solution in Test I into a clean $100cm^3$ beaker. Place one piece of magnesium into the beaker and start a stop watch immediately. Swirl the beaker continuously ensuring that the magnesium is always inside the solution. Record the time taken for magnesium to disapper in table II below.

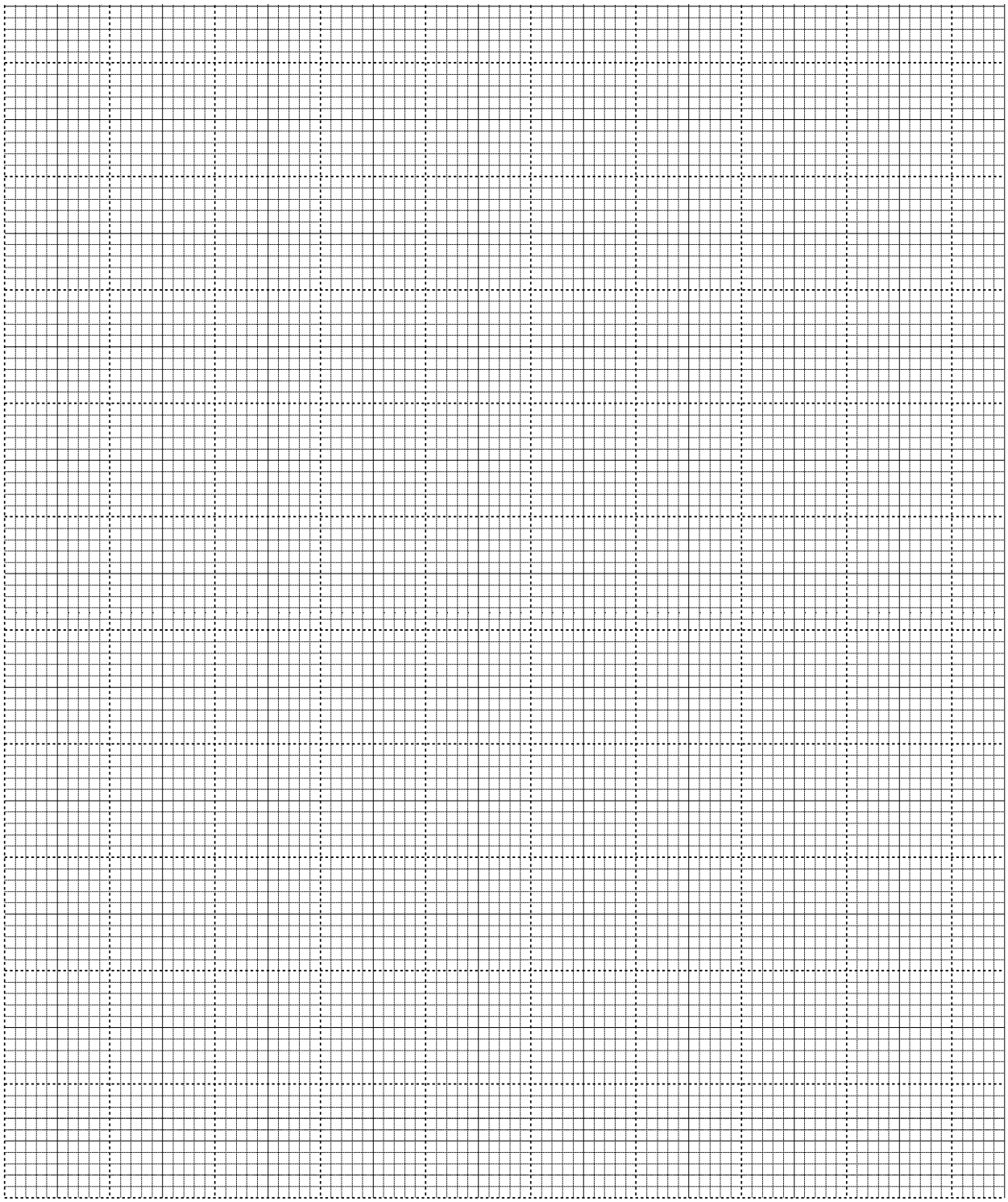
iv) Wash the beaker and repeat procedure (iii) for each of the solution in test tube 2, 3, 4 and 5 making sure the total volume of solution F and water is $10cm^3$ and complete the table.

Table II

Test tube number	1	2	3	4	5
Volume of solution F (cm^3)	10	9	8	7	6
Volume of water (cm^3)	0	1	2	3	4
Time taken (Sec)					
Rate of reaction ($^1/_{time}$)$^{S-1}$					

(5mks)

a) Plot a graph of rate of reaction ($^1/_t$) (y- axis) against volume of solution F (3mks)



b) Use the graph to determine the time that would be taken for a 1cm length Magnesium ribbon to disappear if the volume of the acid solution F used was $7.5cm^3$ (2mks)

c) In terms of rate, explain the shape of your graph (2mks)

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3. a) You are provided with the following solids:-

- Sodium Chloride, Potassium Chloride, Calcium Chloride, Barium Chloride and Solid G

Note: Solid G will also be required for question 3. b)

- You are required to carry out flame tests on the above solids to identify the flame colour Of the cations present in each of them

Procedure:

Clean a metallic spatula and raise it with distilled water. Dry the spatula on the Bunsen burner flame for about 1minute. Allow it to cool, place a little of Sodium Chloride solid on the spatula and burn it strongly with a non-luminous Bunsen burner flame. Note the colour of the flame as the solid burns and record it in table III. Clean the spatula thoroughly using steel wool and repeat the procedure using each of the other solids and complete table III.

Table III

Solid	Colour of Flame
Sodium Chloride	(½ mk)
Potassium Chloride	(½ mk)
Calcium Chloride	(½ mk)
Berium Chloride	(½ mk)
Solid G	(½ mk)

What cation is present in solid G? (½ mk)

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b) You are provided with solid G

Carry out the tests below and record your observations and inferences in the spaces Provided. Identify any gases produced.

i) Place a little of solid G in a dry test tube and heat strongly

Observation	Inferences
(2mks)	(1mk)

ii) Place the remainder of solid G in a boiling tube. Add about $10cm^3$ of distilled water and shake well.

Observation	Inferences
(1mks)	(1mk)

iii) Divide the mixture into three portions for tests I to III below.

I To the first portion, add 2 – 3 drops of aqueous sodium hydroxide until in excess.

Observation	Inferences
(1mks)	(1mk)

II To the 2nd portion, add 2 – 3 drops of Barium Chloride solution followed by dilute hydrochloric acid solution F

Observation	Inferences
(1mks)	(1mk)

III To the 3rd portion, add about 1cm3 of acidified potassium Manganate (vii) solution.

Observation	Inferences
(1mks)	(1mk)

END