Name……. **Index No……**

School…… **Candidate's sign……**

Date……

233/3
CHEMISTRY
PAPER 3
PRACTICAL
JULY / AUGUST 2010
Time: 2 ¼ Hours

KWANZA DISTRICT JOINT EVALUATION EXAM – 2010

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

CHEMISTRY
PAPER 3
PRACTICAL
Time: 2 ¼ Hours

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the spaces provided.
2. Sign and write the date of examination in the spaces provided.
3. Answer ALL the questions in the spaces provided in the question paper
4. 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 required.
5. ALL working MUST be clearly shown where necessary
6. Mathematical tables and electronic calculators may be used.

FOR EXAMINERS USE ONLY

QUESTION	Max Score	Candidate Score
1	22	
2	11	
3	07	
TOTAL	40	

This paper consists of 8 printed pages.
Candidates should check the question paper to ensure that all pages are printed as indicated

1. You are provided with :

- 1.0M Sodium hydroxide solution B
- Dibasic acid C

You are required to determine the concentration of the dibasic acid C

Procedure

Using a 50 ml measuring cylinder, measure out 25cm^3 of solution B into 100cm^3 plastic beaker. Measure the temperature of the solution and record T ….. °C. Using 10ml measuring cylinder, measure 5 cm^3 of solution L into each of the six test tube. To solution B in the beaker, add 5 cm^3 portion of solution C. Stir the mixture carefully using a thermometer and record the higher temperature reached in the table. Pour the second portion of C immediately into the beaker and record the highest temperature reached in the table. Repeat the above procedure with remaining portions of C to complete the table below;

a) Table 1

Total volume of solution C added (cm^3)	0	5	10	15	20	25	30
Total volume of solution (cm^3)							
Final temperature (°C)							
Temperature rise							

(4mks)

b) On the graph grid provided plot a graph of temperature rise against total volume of solution. (3mks)

c) From the graph, determine ;

i) Highest temperature rise. (1mk)

……

ii) What volume of solution C is required to neutralize 25cm^3 of solution B. (1mk)

…….

d) Calculate the number of moles of sodium hydroxide solution B used. (1mk)

e) Calculate the number of moles of dibasic acid C used to neautralise 25.0cm^3 of solution B (2mks)

f) Calculate the molarity of dibasic and C. (2mks)

2. You are provided with solution G and solid H. Solution G is 2 M sulphuric acid and Solid H is magnesium ribbon . You are required to;

- Draw the reaction rate curve for the reaction between magnesium at different concentration of sulphuric acid.
- Determine the mass of magnesium that will react with a known concentration of sulphuric acid per second.

Procedure

- Using a plastic ruler, accurately measure and cut solid H into 1 cm length piece. Fill the burette with solution G. Transfer 10.0cm^3 of solution G from burette into 100ml beaker provided.
- Using a measuring cylinder, accurately measure 20.0cm^3 of distilled water and add it to solution G in the beaker and shake well.
- Drop one of the cut solid H into the beaker and start the stopwatch at the same time. Note the duration it takes for complete reaction between the piece and the acid solution
- Record the time taken in the table
- Pour out the content after the reaction and rinse the beaker with distilled water.
- By taking the various volume of the acids and distilled water , repeat the procedure to complete the table II below.

Table II

Experiment number	1	2	3	4	5
Volume of solution G used (cm^3)	10	15	20	25	30
Volume of distilled water used (cm^3)	20	15	10	15	0
Moles of solution G used					
Time taken for complete reaction (sec)					

a) Using the values in table II, plot a graph of moles of sulhuric acid. (y – axis) against the time for complete reaction. (3mks)

b) From your graph ; calculate the rate of reaction when $20cm^3$ of sulphuric acid is used. (2mks)

c) The equation of the reaction between magnesium and sulphuric acid is

$Mg_{(s)} + H_2SO_{4(aq)} \longrightarrow MgSO_{4(aq)} + H_{2(g)}$

Given that 1 cm of magnesium reacted with $^1/_{10}$ of a mole of H_2SO_4 in experiment I:

i) Determine the moles of magnesium in 1 cm of solid H. (2mks)

ii) Determine the rate of reaction of magnesium with sulphuric acid in experiment I in grams per second. (Mg = 24) (2mks)

3. You are provided with solid P. Carry out the tests in the table below and record your observations and inferences in the spaces provided

a) Place all the solid P provided into a boiling tube, add distilled water while shaking until the boiling tube is ¾ full. Divide the resulting mixture into five portions.

Observations	Inferences
(1 mk)	(1 mk)

b) To the first portion add about $2cm^3$ of $NaoH_{(aq)}$ then warm. Test any gases using litmus papers.

Observations	Inferences
(1mk)	(1mk)

c) To the second portion add ammonia solution until in excess

Observations	Inferences
(1 mk)	(1mk)

d) To the third portion add lead (II) nitrate solution and warm

Observations	Inferences
(1 mk)	(1mk)

e) To the fourth portion, add barium chloride solution followed by dilute hydrochloric acid.

Observations	Inferences
(1mk)	(1mk)

f) To the fifth portion, add hydrogen peroxide.

Observations	Inferences
(1 mk)	(1mk)