

Name: Index No.

School: Candidate's Sign.

Date:

233/3
CHEMISTRY
PAPER 3
JULY/AUGUST 2011
TIME: 2 ¼ HOURS

NYAMIRA DISTRICT JOINT EVALUATION TEST

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

Chemistry
Practical

INSTRUCTIONS TO THE 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.
- Mathematical tables and electronic calculators may be used.
- All working **MUST** be clearly shown where necessary.
- Use the first 15 minutes of the 2 ¼ hours to ascertain you have all the chemical sand apparatus tha you may need.

For Examiners use Only

QUESTION	MAX. SCORE	SCORE
1	23	
2	10	
3	07	
TOTAL	40	

This paper consists of 4 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

1. You are provided with:
- sulphuric (VI) acid, solution E
 - 0.5 sodium hydroxide solution, solution F
 - 8 cm of magnesium Ribbon,

You are required determine the concentration of sulphuric (VI) acid moles per litre.

Procedure I

Measure 50cm³ of solution E using a 50ml measuring cylinder and place all of it in 100ml beaker and keep it for use later.

Take the 8cm of magnesium ribbon given and fold it into half and break. Keep folding the remaining magnesium ribbon pieces until you get 8 equal of (1cm each) pieces. Keep the magnesium ribbons safely so as to use in the following experiments.

Ready with a stopwatch, pick one piece of the above magnesium ribbon of 1 cm length(you have prepared) and drop it into the beaker containing the 50cm³ of solution E. immediately start your stopwatch until all the ribbon reacts completely and stop. Record time taken in seconds. Without adjusting the stopwatch to zero drop the second 1cm of magnesium ribbon piece to the same mixture and record the time taken for the second ribbon to react completely .

Repeat the experiment ribbon until the 8th piece of magnesium ribbon is used.

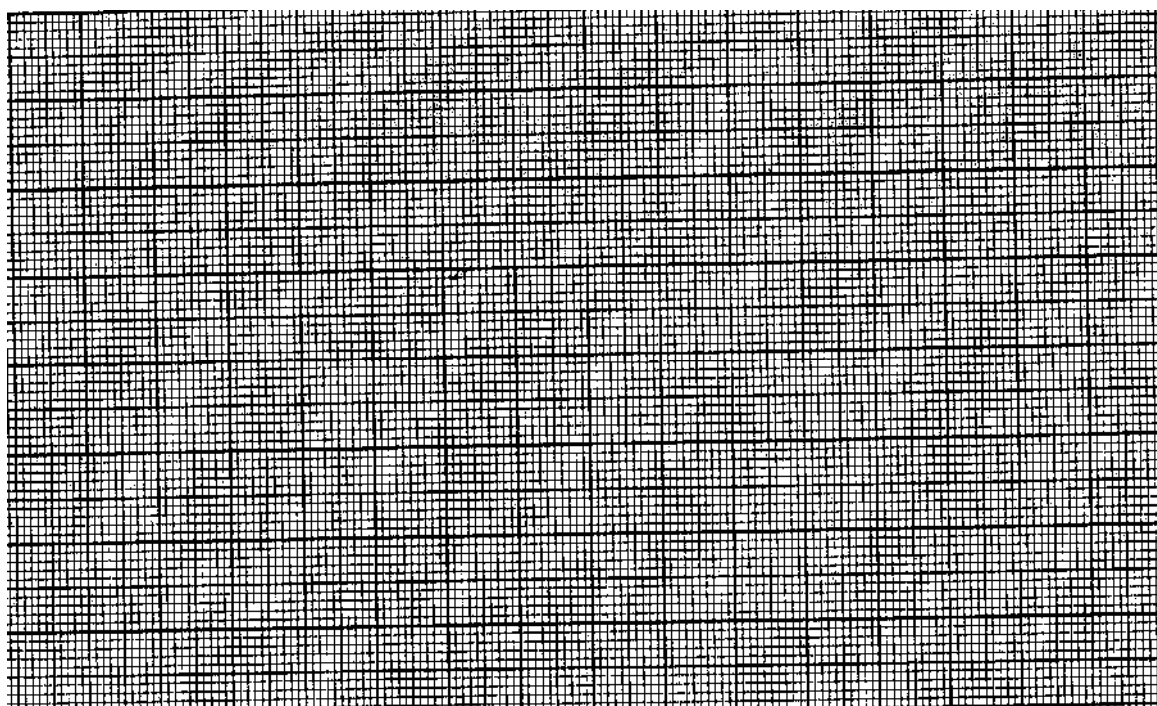
Keep the solution mixture for use in procedure II.

Complete the table I by computing $\frac{1}{\text{time}} \text{ sec}^{-1}$

1	Length of magnesium Ribbon	1	2	3	4	5	6	7	8
2	Total time taken in second								
3	Rate of reaction $\frac{1}{t}$ sec-1								

(5mks)

(a) Plot a graph of $\frac{1}{\text{time}} \text{ sec}^{-1}$ (y-axis) against length of magnesium ribbon (cm) used. (3mks)



- (b) From your graph, determine the time that would be taken if 3.5 cm of magnesium ribbon was used. (2mks)

	I	II	III
Final burette reading (cm ³)			
Initial burette reading (cm ³)			
Volume of solution fused (cm ³)			

- (c) How does the rate of reaction vary with increase of length of magnesium ribbon? Explain. (2mks)

Procedure II

Place all the solution obtained in procedure I into a clean 250ml volumetric flask. Add distilled water to make 250cm³ (i.e to the mark) of solution. Label the resulting solution as solution J.

Fill a burette with solution F, pipette 25.0cm³ of solution J add 3 drops of phenolphthalein indicator and titrate with solution F. Record your results in table II repeat the titration two more times.

Table II

	I	II	III
Final burette reading (cm ³)			
Initial burette reading (cm ³)			
Volume of solution fused (cm ³)			

- d) Determine the average volume of solution F used. (1mk)
- e) Calculate the number of moles of sodium hydroxide, solution F that were used. (1mk)
- f) Determine
- (i) The number of moles of sulphuric (VI) in 25cm³ of J (1mk)
- (ii) The number of moles of sulphuric (VI) acid in 250 cm³ of solution J. (1mk)

(iii) Using that the total number of moles of sulphuric (VI) acid that were used during the reaction with magnesium ribbon to be 0.074 moles and f(ii) above. Calculate the total number of moles of sulphuric (VI) acid in 50 cm³ of solution E (1mk)

(iv) Calculate the concentration of the original sulphuric(VI) acid, solution E in moles per litre. (1mk)

You are provided with solid L. Carry out the tests below write your observations and inferences in the spaces provided.

a) Place all solid L in a boiling tube, add 15cm³ of distilled water while shaking well. Keep it for the following experiments below.

Observations	inference
(1mk)	(1mk)

b(i) Measure 2cm³ of the solution and add 3 drops of soap solution shake and leave it to stand.

Observations	inference
(1mk)	(1mk)

(ii) Measure 2 cm³ of the solution and boil if for one minute and cool it. Then add 3 drops of soap shake and leave it to stand

Observations	inference
(1mk)	(1mk)

(iii) Measure 2cm³ of distilled water into a test tube and add 3drops of soap. Shake and it to stand.

Observations	inference
(1mk)	(1mk)

c) (i) Measure 2 cm³ of solution L and add 2m sodium hydroxide drop wise until excess.

Observations	inference
($\frac{1}{2}$ mk)	($\frac{1}{2}$ mk)

(ii) to 2 cm³ of solution L add 3 drops of dilute sulphuric (VI) acid solution E

Observations	inference
($\frac{1}{2}$ mk)	($\frac{1}{2}$ mk)

(iii) Measure 2cm³ of solution L and add 2 drops of Lead (II) nitrate and boil.

Observations	inference
($\frac{1}{2}$ mk)	($\frac{1}{2}$ mk)

3. You are provided with liquid M. Carry out the tests below and record your observations and inferences in the spaces provided.

(a) Place four drops of liquid M on a watch glass. Ignite the liquid using a Bunsen Burner.

Observations	inference
($\frac{1}{2}$ mk)	($\frac{1}{2}$ mk)

(b) To about 1cm³ of liquid M in a test tube add about 1cm³ of distilled water and shake well.

Observations	inference
($\frac{1}{2}$ mk)	($\frac{1}{2}$ mk)

(c) To about 1cm³ of liquid M in a test tube, add a small amount of solid sodium hydrogen carbonate.

Observations	inference
($\frac{1}{2}$ mk)	($\frac{1}{2}$ mk)

(d) to about 1cm³ of liquid M in a test tube add 3 drops of acidified potassium manganate (VII) and shake.

Observations	inference
($\frac{1}{2}$ mk)	($\frac{1}{2}$ mk)

(e) To about 1 cm³ of liquid M in a test tube add 3 drops of Bromine water and shake

Observations

inference

(½mk)

(½mk)

(f) To about 1cm³ of liquid M in a test tube, add about 1cm³ of acidified potassium dichromate and allow it to stand for one minute.

Observations

inference

(½mk)

(½mk)

(g) To about 1 cm³ of liquid M, add the litmus papers.

Observations

inference

(½mk)

(½mk)