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	8,3	120 120	Data	Class

233/3 CHEMISTRY Paper 3 PRACTICAL J JULY 2013 2 % hours

ALLIANCE HIGH SCHOOL

Kenya Certificate of Secondary Education

CHEMISTRY

Paper 3

PRACTICAL 2 1/4 HOURS

Instructions to candidates

- Write your name and index number in the spaces provided above.
- 2. Sign and write the date of examination in the spaces provided above.
- 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 ½ 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.
- 5. All working MUST be clearly shown where necessary.
- 6. Mathematical tables and silent electronic calculators may be used.
- 7. This paper consists of 8 printed pages.
- Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

For Examiner's use only

Question	Maximum score	Candidate's
1	17	17
2	10	
3	13	
Total	40	
31	-	.,

- 1. You are provided with:
 - 1.60g of solid A; a dibasic acid.
 - Solution B containing 4,75g per liter of salt B.
 - Aqueous sodium hydroxide, solution C.
 - Phenolphthalein indicator.

You are required to prepare a solution of solid A and use it to;

- determine the concentration of sodium hydroxide, solution C.

- react salt B with excess sodium hydroxide and then determine the relative molecular mass of salt B.

Procedure I

- (a) Using a burette, place 25.0cm³ of solution B in each of the two 250ml conical flasks provided. Using a pipette and pipette filler, add 25.0cm³ of solution C to each of the two conical flasks. (The sodium hydroxide added is in excess). Label the conical flasks 1 and 2.
- (b) Heat the contents of the first conical flask to boiling and then let the mixture boil for 5 minutes. Allow the mixture to cool.
- (c) Repeat procedure (b) with the second conical flask.
 While the mixtures are cooling, proceed with procedure II.

Procedure II

- (a) Place all of solid A in a 250ml volumetric flask. Add about 150cm³ of distilled water, shake well to dissolve the solid and then add water to make up to the mark. Label this as solution A.
- (b) Place solution A in a **clean** burette. Using a pipette and pipette filler, place 25.0cm³ of solution C in a 250ml conical flask. Add 2 drops of phenolphthalein indicator and titrate with solution A. Record your results in Table 1. Repeat the titration two more times and complete the table.

Table 1

******		* 9	
×	I	II	ш
Final burette reading			
Initial I burette reading		is a _{koss} s	
Volume of solution A used (cm ³)			

(3mks)

Calculate the:-

(i) average volume of solution A used:

(ii) Concentration in moles per lit (Relative molecular mass	re of the dibasic	acid in solution	A	(2mks)
	2)	m K ^{ee}		
want field	#DMC		•	
** ***********************************	800 [2]			Res
July 1)	# 2	
. × •		£		3 ()
.67			â	
(iii) Moles of the dibasic acid u	ised.			(1mk)
7 0				(mik)
Qare'				
Q ^o	N 800	?		
a ^X	L 8 2 3 8		. 8	ė
	a in 25 03 - C	v		
(17) Moles of sodium hydroxide	e in 25.0cm of 8	olution C.	19	(1mk)
1 ^C	3	8 N _{e.}	*	46 a
· Alexander	A. A.			
	i when			
45 0				
(v) Concentration of sodium h	ydroxide in mole	s per iitre.		(2mks)
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•				
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Procedure III Add 2 drops of phenolphthalein incorocedure I and titrate with solution procedure with the contents of the	n A. Record vo	ur reculte in Tak	la 7 Damas	sk prepared
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(iii) moles of sodium hydroxide that react with the dibasic acid.

(1mk)

(iv) moles of sodium hydroxide that reacted with 25.0cm³ of salt B in solution B.

(2mks)

(v) Given that 1 mole of salt B reacts with 2 moles of sodium hydroxide, calculate the;

I. Number of moles of salt B in 25.0cm³ of solution B. (1mk)

II. Concentration in moles per litre of salt B in solution B. (1mk)

III. Relative molecular mass of salt B. (2mk)

2. You are provided with:

Magnesium ribbon; 2.0M hydrochloric acid labeled **solution L.** Stop clock/watch.

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

Procedure.

- Place five test-tubes on a test-tube rack and label them 1,2,3,4 and 5.
 Using a 10cm³ measuring cylinder, measure out the volume of 2.0M hydrochloric acid solution L as shown in table 3 and pour them into the corresponding test-tubes.
- Wash the measuring cylinder and use it to measure the volumes of water as indicated in the table and pour into the corresponding test tubes.
- II. Cut out five pieces each of exactly 1cm length of magnesium ribbon.

- III. Transfer all of the solution in test-tube 1 into a clean 100cm3 beaker. Place one piece of magnesium into the beaker and start a stop clock/watch immediately. Swirl the beaker continuously ensuring that the magnesium is always inside the solution. Record in the table the time taken for the magnesium ribbon to disappear. Wash the beaker each time.
- IV. Repeat procedure III for each of the solutions in the test-tubes 2,3,4 and 5 and complete the table

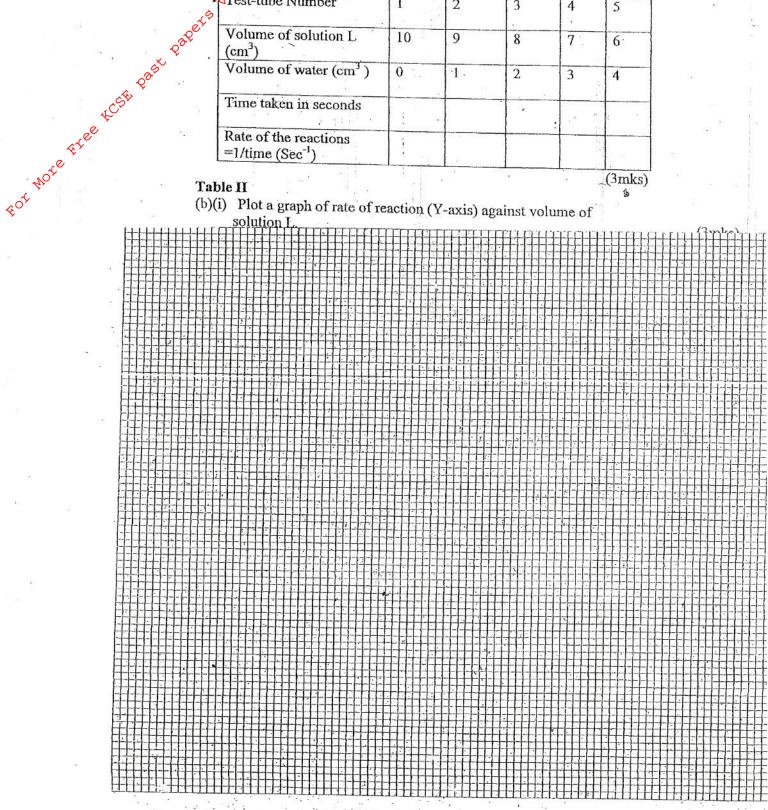
(3mks)

(a) Table 3

Test-tube Number	1	2	3	4	5
Volume of solution L (cm ³)	10	9	8	7	6.
Volume of water (cm ³)	0	11.	2	3	4
Fime taken in seconds	1 .		.		
Rate of the reactions =1/time (Sec ⁻¹)	1				

Table II

(b)(i) Plot a graph of rate of reaction (Y-axis) against volume of



Observation(s)

Inference(s)

(1mk)

(1mk)

- (b) Place all the remaining solid R into a boiling tube and add distilled water while shaking till the total volume is about 10cm³. Filter the solution and keep the residue for test (c) below. Divide the filtrate into four portions.
 - (i) To the 1st portion add sodium hydroxide drop wise till in excess.

Observation(s) inference(s)

(½mk) (1mk)

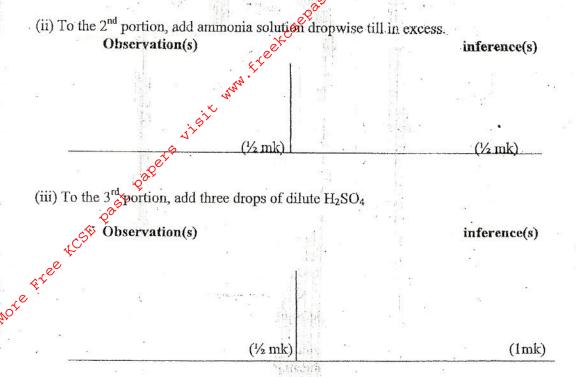
(ii) To the 2nd portion, add ammonia solution drop wise till in excess

Observation(s) inference(s)

(½mk) (1mk)

12		\sim					
	Observation	(S)EEY	* sk*			- 5 2	inference(s)
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(iv)	167		(½mk)	Electrical de la companya del companya del companya de la companya	74	90	(1mk
oers	to or	39	R		-	4	
(iv)	To the Ath nor	tion old -	c .	85	18 158		10
(11)	To the 4 th por	uon, add a	l few drops o	of Barium	nitrate sol	lution.	
	Observation((s)	4	1		45	inference(s)
	NE 1651		The same	35			
8				e (84
		10%	4				
	,		22/02/ 22/02/				
Place t	he residue into king till the sol	a test tube	(½mk) e and add dil solves. Divi	ute nitrio	(v) acid w	hile three pe	81
5440	he residue into king till the sol eservation(s)	a test tube	e and add dil	ute nitrio	(v) acid w ution into	three p	(½mk ortions. inference(s)
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