NAME	ADM NO
SCHOOL	CANDIDATES SIGN
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233/3 CHEMISTRY FORM 3 TIME: 2 ¹/₄ HOURS

END OF TERM (III) EXAMINATION -2019

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

233/3 CHEMISTRY FORM 3 TIME: 2 HOURS

For examiners use only

SECTION	QUESTION	CANDIDATE'S SCORE
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1.	You	are	provided	with:
			P	

- Solution K monobasic and HX
- Solution L is sodium hydroxide containing 0.8g solute in 200cm³ of solution
- Solution M in anhydrous metal carbonate Mg CO₃ (R.f.m. 106) containing 5.3g of the carbonate dissolved in 500cm₃ solution

You are required to:-

Standardize the monobasic acid and experimentally determine the equation for the reaction Between the acid HX and the carbonate M₂CO₃

Procedure I

Table 1

Fill the burette with solution K using pipette and pipette filler transfer 25cm³ of solution L into a clean dry conical flask add 2 drops of methyl orange indicator and Titrate with solution

K in the burette. Repeat the procedure two more times to complete the table (4mks)

		⊘		
Experiment	1	2 2510	3	
Final burette reading (cm ³)		. CSER		
Initial burette reading (cm ³)		O.K	1	

Volume of solution K (cm³)

(a) Determine the average volume of solution K used in cm ³	(lmk)
A State of the sta	
(b) (i) Calculate the conce nt ation of solution L in moles per litre	(1mk)
, or	
(ii) Calculate the moles solution L that reacted with K	(1mk)
(iii) Calculate the concentration of solution K in moles per litre	(1mk)
	•••••

Procedure II

Using a pipette and pipette filler, transfer 25cm³ of solution M into a clean dry conical flask. Titrate with solution K in the burette using methyl orange as the indicator. Record your results in the table II. Repeat the procedure two more times to complete the table. (4mks)

Table II

Experiment	1	2	3
Final burette reading(cm ³)			*
Initial burette reading(cm ³)			1
Volume of K used (cm ³)			11

V	(a) Determine the average volume of solution K used	(1mk)
		65.30
	(b) Calculate the concentration of solution M in moles per litre	(2mks)
	20 ^{05th}	
_	(c) Calculate the moles of solution M that reacted	(2mks)
******	m	
	(d) Calculate the number of moles of solution Kin the average volume	(2mks)
	; OR CONTENT	
4	(e) From your answers in parts (c) and (d) above how many moles of solution	
edn.	K reacted with 1 mole of solution M	(2mks)
	kot kog.	
	6	
	(f) Hence write an equation for the reaction between M and K	(1mk)
,	······································	

- 2. You are provided with solid P, carry out the following tests
 - (a) Scoop half a spatula full of solid P and put it in a dry test tube. Heat strongly and test for the gases produced

Observation	- (Fig)	Inferences
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E - C - T 5	(1mk)	(1mk)

- (b) Put the remaining solid P in a boiling tube, add 5cm³ of distilled water and shake thoroughly. Divide the resulting solution into 5 portions.
- (i) To the first portion add lead (II) nitrate solution

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	29	world - the marks seems to passes
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(2mls)	ee Mu	mbles loomed trive become H
10	(lmk)	(1mk)

(ii) To the 2^{nd} portion add Barium nitrate solution followed by addition of dilute n	nitric acid
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Observatio	on		Inferenc	es		
	14					
			×		*	
			9660			
		(1mk)				(1mk)

(iii) To the 3rd portion add Sodium Hydroxide solution dropwise until in excess

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		white.	
(1mk)	(1mk)		(1mk)

(iv) To the 4th portion add aqueous ammonia solution until in excess

Observation	Inferences
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	**
(1mk)	(1mk)

(v) To the 5th portion add Sodium Sulphate Solution

Observation		Inferences	
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		2.	
	(1mk)	*	(1mk)

3. You are provided with Solid G. Carry out the tests indicated below

(a) Scoop half a spatula end full of solid G and burn it over the Bunsen burner flame

Observation	*	Inferences	
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	*ort VIS	itr's	
	(1mk)	ž1	(1mk)

(b) Place the remaining Solid G in a boiling tube, add 4cm³ of distilled water and shake Thoroughly

Observation		Inferences	
7e -			
	(1mk)	(1ml	k)

(c) To the resulting solution in (b) above add 3 drops of acidified potassium Manganate (VII) Solution

Observation	Inferences
12 185	www.freekcsepasipar
-	(1mk) (1mk)
(1	(1mk)

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