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P525/3	21.5				
CHEMISTRY					- 20 30 00 2
PRACTICAL					
PPAPER 3					
JULY/AUGUST 2023		The same			
3:15 hours	and the same				

KANUNGU DISTRICT JOINT MOCK EXAMINATIONS UGANDA ADVANCED CERTIFICATE OF EDUCATION CHEMISTRY PRACTICAL PAPER 3 3 hours 15minutes

INSTRUCTIONS:

Answer all questions

Record your answer on this question paper in the spaces provided

Mathematical tables and silent non-programmable calculators may be used

Reference books i.e. text books on qualitative analysis etc. should not be used

Candidates are not allowed to start working with apparatus for the first 15minutes. This time is to enable candidates to read the question paper and make sure they have all the apparatus and chemicals that they may need.

	FOR EX	AMINER'S USE ONLY	and Investor
Q1	Q2	Q3	Total
		0.0000000000000000000000000000000000000	to a sign war lan
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1.	You	arç	provided	with	the	fol	lowing;
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FA1, which contains 2.8g of sodium hydroxide per litre.

FA2, which is 0.02 M potassium manganate (v) solution-

FA4, which is 2M sulphuric acid.

Solid P, which is an acidic component of the formula $H_w(C_2O_4)_z$, yH_2O .

You are required to determine the values of w, x, and y. Solid P dissolves in water according to the equation.

$$H_w(C_2O_4)_x.yH_2O(aq) \longrightarrow wH^+(aq) + xC_2O_4^2(aq) + yH_2O(aq)$$

The hydrogen ions react with the hydroxide ions from sodium hydroxide according to the equation.

$$H^+(aq) + \bar{O}H(aq) \longrightarrow H_2O(l)$$

Also, acidified manganate (VII) ions from potassium manganate (VII) reacts with oxalate ions according to the equation.

$$2MnO_{4}(aq)+16H^{+}(aq)+5C_{2}O_{4}^{2}(aq) \longrightarrow 2Mr^{2+}(aq)+10CO_{2}(g)+8H_{2}O_{4}(aq)$$

Procedure I.

Weigh accurately 1.0g of solid P into a clean breaker. Add 100cm3 of distilled water using a measuring cylinder.

Transfer the solution into a 250cm3 volumetric flask and make up to the mark with distilled water. Label the solution FA3.

Pipette 20 or 25cm3 of FA3 into a clean conical flask. Add 2.3drops of phenolphrhalein indicator and titrate with FA1 from the burette until the end point is reached.

Repeat the titration until you obtain consistent results.

Record your results in a table below.

Mass of beaker =	The second secon		——हिंगाम
Mass of P =			
Volume of pipette used=			S Comme
TABLE 1			
Final burette reading(cm ³)		E	(Manual
Initial burette reading(cm ³)		N. C.	
Volume of FA1 used(cm ³)			
	S. A. Carlo		Section 2
/alues used to calculate average volume			

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Average volume of FA1(02½mark)	
(02/2mark)	
	CALL SEA THE BEST TO BE
Procedure II	the same of the sa
	and the second s
Pipette 20 or 25cm ³ of FA3 in a Conical flask. Add an equal volume of FA4.	00 80
Add an equal volume of FA4 and heat the mixture to 70 with FA1 from the burette.	°C. Titrate the hot solution immediately
Repeat the titration until you get consistent results.	
Record your results in table II below.	
	(04½marks)
TABLE II	9
Final burette readings(cm ³)	
Initial burette readings(cm ³)	
Volume of FA1 used(cm ³)	
orriti dised(cm)	
	* · · · · · · · · · · · · · · · · · · ·
Values of FA1 used to calculate average volume.	(½mark)
	(cm ³)
Average volume of FA1 used	(02½mark)
<u></u>	(cm ³)
Questions	,
a) Calculate the Concentration of,	(0.5)
i). H ⁺ in FA3 in moles per litre	(05½mark)
••••••	

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ii). Value of y in $H_w(C_2O_4)_x$. yH_2O	, , , , , , , , , , , , , , , , , , ,

£	
<u></u>	
i). Ratio of w to x	
b). Determine the;	
2004 201	
2.53.12	
1) 0 04 m 1 13 m motes per me	
ii) $C^2 O_4^{2-}$ in FA ₃ in moles per litre	(06marks)

	M.	
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	***************************************	and the state of t

	onic compound K that contain	s two cations and two anion
on are provided with an inorga		
ut the following tests and ident our observations and deduction	ity the ions present and any g	
ut the following tests and ident our observations and deduction ABLE III	ity the ions present and any gas in the table below.	gases, which may be evolved
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ut the following tests and ident our observations and deduction ABLE III Test a). Heat a spatula end full of K in a dry test tube until there	ity the ions present and any gas in the table below.	gases, which may be evolved
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ut the following tests and ident our observations and deduction ABLE III Test a). Heat a spatula end full of K in a dry test tube until there is no further change b). To a spatula end full of K dd three drops of sulphuric	ity the ions present and any gas in the table below.	gases, which may be evolved
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ut the following tests and ident our observations and deduction CABLE III Test a). Heat a spatula end full of K in a dry test tube until there is no further change b). To a spatula end full of K indd three drops of sulphuric	ity the ions present and any gas in the table below.	gases, which may be evolved
ut the following tests and ident our observations and deduction CABLE III Test a). Heat a spatula end full of K in a dry test tube until there is no further change b). To a spatula end full of K add three drops of sulphuric	ity the ions present and any gas in the table below.	gases, which may be evolved
TABLE III Test a). Heat a spatula end full of K in a dry test tube until there is no further change b). To a spatula end full of K add three drops of sulphuric	ity the ions present and any gas in the table below.	gases, which may be evolved
You are provided with an inorgate out the following tests and identification of the following tests and identification of the following tests and deduction of the following tests and deduction of the following test and full of the following test tube until there is no further change of full of K add three drops of sulphuric acid and warm gently.	ity the ions present and any gas in the table below.	gases, which may be evolved

c). To two spatula end full of	
K in a boiling tube add 5cm ³	
of water and shake well to	
dissolve	
To the resultant solution add	
dilute sodium hydroxide	
solution dropwise until excess	
and then filter. Keep both the	
filtrate and the residue. To the	
filtrate add dilute nitric acid	
dropwise until the solution is	
just acidic and divide the	
acidic solution into seven	
parts.	
(i). To the first part add dilute	
sodium hydroxide solution	
dropwise until in excess.	
dropwise diffi in excess.	
the second	The first Milking on the box and "analysis care a
provide de de	
(ii). To the second part add	
dilute ammonia solution	
dropwise until in excess.	
(iii)To the third part, add 3-4	
drops of potassium iodide	
solution.	
	Literature and the second of t
-	To a distance of the second of
(iv). To the fourth part carry	
out a test of your own choice	
-	
o confirm one of the cations	
contained in K.	
jug jar dargeta e ki	

		vienassi karing mengelik
(v). To the fifth part, add		
barium nitrate solution.		
	A I	Carrier Comment Carrier
(vii). To the sixth part, add 2-3		
drops of silver nitrate solution	7	
followed by dilute ammonia solution until in excess.	4	
solution until in excess.	k .	
(vii). To the seventh part, add		
one drop of dilute nitric acid		
followed by one drop of	10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
bleaching agent and then 2-3		
drops trichloromethane and then shake gently.		As Black to the Co.
(d). Wash the residue	A STATE OF THE PARTY OF THE PAR	
obtained in (c) above with	a so in the section	A CONTRACT OF THE PROPERTY OF
dilute sodium hydroxide	and the state of	
solution and then dissolve the		
washed residue in dilute		
sulphuric acid. Divide the	*	
resultant solution into four		
parts.		Control of the second
(i) To the first part, add dilute sodium hydroxide solution		and the of the Final
dropwise until in excess.		
(ii). To the second part, add		
dilute ammonia solution	7.3	
dropwise until in excess.		
GIODMISC micr		
	and the second of the second o	The same Real and the State of



Test	Dhearuntion		D. L. A'	
. You are provided with an organ ne nature of M.	ic compound I	M. Carry out the	following tests	and comment on
C	and			
ii). Anions in				
ζ	and	• • • • • • • • • • • • • • • • • • • •		
(i). Cations in				
(e). Identify the;		7		The state of the s
	. 1		a 7,	
			4.5	
K				
confirm the second cation in				
test of your own choice to				
To the fourth part carryout a	THE RESERVE THE PARTY OF THE PARTY OF	And the second law about the second law displacement	AND RESIDENCE OF THE PARTY OF T	the same time of administration of the same time to the same time time to the same time time time time time time time ti
			1,37	
			1.28	
solution				
(iii). To the third part add 2-3 drops of potassium chromate				

Test	Observation	Deductions
(a). Burn a small amount of M on a spatula end or crucible lid.		
(b). Shake two spatula ends full of M with about 8cm ³ of ethanol. Test the resultant solution with a litmus paper		
c). Divide the resultant olution into three parts. i). To the first part add odium hydrogen sulphite olution.		

(ii) To the same		
(ii). To the second part add		
neutral iron(ii)chloride		
solution		
Control of		
(iii). To the third part add		
iron(ii)chloride solution.		1
(d). To a spatula end full of		
M in a test tube, add 2cm ³ of		
sodium hydroxide solution		
and warm to dissolve, Cool		
the resultant solution and		
divide the resultant solution		
into two parts		
(i). To the first part add		
neutral iron(ii)chloride		
solution and heat.	*	
(ii)to the second part, add		
dilute hydrochloric acid		
(e). Carry out a test of your		
choice to determine the	4	
functional group of the		
organic substance M		

	* * * * * * * * * * * * * * * * * * *	
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2	1	
(f) Comment on the nature of M	l.	
		FWD
		END

P525/3 /Inst. Sc Chemistry Practical Instructions July / Aug 2023

KANUNGU DISTRICT JOINT MOCK EXAMINATIONS UGANDA ADVANCED CERTIFICATE OF EDUCATION PRACTICAL CHEMISTRY INSTRUCTIONS

(PAPER P525/3)

CONFIDENTIAL

Great care should be taken that the information given below doesn't reach the candidates either directly or indirectly.

NB: The subject head / head of department must ensure that the teacher responsible for preparing the apparatus hands in his / her trial results properly sealed in a separate envelope and firmly fastened / attached to candidates scripts envelope(s).

- The description of the reagents and chemicals specified below does not necessarily correspond with the description in the question paper. Candidates must not be informed of the differences.
- 2. Candidates are not allowed to use reference books (i.e text books, booklet on qualitative analysis etc) during the examinations.
- 3. In addition to fittings and substances ordinarily contained in a chemistry laboratory, each candidate will require;
- 1 Burette 50cm³
- 1 Pipette 25cm³ (or 20cm³)
- 1 Volumetric flask (250cm³)
- 2 conical flasks
- 1 filter paper
- 4 Beakers (250cm³)
- 8 test tubes
- 100cm³ of FA₁
- -100cm³ of FA₂

- 100cm³ of FA₄
- 1.3g of P
- Phenolphthalein indicator and methyl orange indicator
- 2 measuring cylinders (100cm³)
- 2.6g of K
- 3g of M
- 8cm³ of ethanol

Easy access to:

- Heat source
- Weighing balance reading to at least one decimal point.
- Reagents for identifying ations anions and organic compounds.
- FA₁ is prepared by dissolving 2.8g of sodium hydroxide to make one litre of solution
- FA₂ is prepared by dissilving 3.16g of potassium manganate (VII) per litre
- K is prepared by mixing Al₂ (SO₄)₃. 6H₂O, MgSO₄. 7H₂O and Kl in the ratio of 1:1:0.5 respectively.
- M is Benzoic acid
- P- Ethanedioic acid

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