Name ..... U0025/……
Combination…….

Kibuli Sec School

Uganda Advanced Certificate Examinations

Mock 2019

Chemistry P525/3

Time allowed: 3houirs 15 minutes Dtae 22nd may, 2019 (2-4.45pm)

Instructions

Answer **all** questions

Your answers should be very clear and neat.

Q1 Thiosuphate Iodine iodine chlorous acid

You are provided with FA1 which is sodium thiosulphate-n-water, FA2 is 0.05M iodinr solution., FA3 which is jik and starch solution. You are required to determine:

i) The value of n, water of crystallization in FA1
ii) The concentration of jik, commercial bleaching solution, in FA2.

Method1

Weigh accurately 6.1g of FA1. Place it on a 250cm3 volumetric flask. Dissolve it in a minimum volume of water, then make up th e mixture to mark with water. Shake the mixture to ensure it is uniform. Label it FA1.

Pipette 25.0 or 20.0 cm^3 of FA2 to a clean flask. Titrate the mixture with FA1 until it becomes faintly yellow. Add two drops of starch solution and continue titrating with FA1 until mixture just turns colourless. Record your results in table. Repeat the experiment to obtain consistent results.

Weighings

Mass of container + FA1g =

Mass of container after transferring FA1g =

Mass of FA1 used g=

Pipette capacity cm^3

Run	Trial	1	2	3
Final reading cm^3				
Initial reading cm^3				
Volum of FA1 used cm^3				

Calculate;

i) Mean titre.

ii) Moles of iodine in the pipetted volume.

iii) Moles of FA1 in mean titre.

$I_2(aq) + S_2O_3^{2-}(aq)$ 2I-(aq) $S_4O_6^{2-}(aq))$

iv) Molarity of FA1

v) Value of n.

(Na-23, S032, C016, H-1)

vi) Percentage of awater in FA1

1b) Pipette 20.0 or 25.0cm^3 of FA3. Place it in a 250cm^3 volumetric flask. Make up the solution to 250cm^3 with water. Shake well to ensure uniformity. The pipette 20.0 or 25.0cm^3 of the diluted solution to a clean flask. Add 5cm3 of 2M H_2SO_4 followed by 5cm^3 of potassium iodide solution. Titrate the iodine liberated with FA1 until the solution turns faintly yellow in colour. Add starch indicator and continue titrating until the mixture just turns colourless. Record your results in a table and repeat the experiment to obtain consistent results.

Pipette capacity cm^3

Run	Trial	1	2	3
Final reading cm^3				
Initial reading cm^3				
Volum of FA1 used cm^3				

Calculate;

i) Mean titre.

ii) Moles of FA FA1 in mean titre.

ii) Moles of FA3 pipetted

iii) Molarity of FA3 in stock solution used.

Iv) Percentage by mass of sodium chlorate (I) in FA3 stock solution. Na= 23, Cl= 35.5, O= 16

Q2 You are provided with Q containing three cations and three anions. Perform the tests given on it, record your observations and deduction. Identify gases formed immediately.

Test	observation	Deduction
1. Place little of Q in a tube and heat strongly until there is no further change		
2. To little of Q in a tube add 6cm^3 of water, shake well. Filter . Keep residue and filtrate. Divide filtrate in		

8parts		
a) To the first part add dil NaOH drop by drop until in excess..		
b) To the 2nd add dil NH_3 drop by drop until in excess.		
c) To the 3rd add drops of sodium carbonate solution.		
d) To 4th add drops of dil KI solution.		
E) To 5th add drops lead(II) nitrate solution.		

F) To 6th add drops silver nitrate solution.		
g) Use the 7th part to perform test of your choice to confirm anion in filtrate.		
3. Transfer the residue to a clean tube, add excess sodium hydroxide solution, shake and filter. Keep both residue and filtrate. To the filtrate, add dil HNO_3 drop by drop until in excess. Divide solution in six parts.		
i. To the first add dil NaOH drop by drop until in excess.		
ii. To 2nd add dil.		

	NH_3 solution drop by drop until in excess.		
iii.	To 3rd add dil HCl solution then warm mixture to boiling.		
iv.	To 4th add drops of potassium chromate solution.		
v.	To 5th add drops of lead(II) nitrate solution, heat the mixture to boiling.		
vi.	To 6th add drops silver nitrate solution.		
4. Transfer the residue to a clean tube add dil.HNO_3 solution. Divide the solution in			

four parts		
a. To the 1st add dil NaOH solution drop by drop until in excess.		
b. To the 2nd add dil NH_3 drop by drop until in excess.		
c. To the 3rd add a spatula end full of ammonium chloride the add dil NH_3 drop by drop until in excess.		
d. To the 4th add sodium bismuthate followed with drops of conc HNO_3 cautiously.		

Cations in Q

1

2

3

Anions in Q

1

2

3.

Q 3 You are provided with P, which is an organic compound. Perform the test given on it . Record observations and deductions.

TEST	OBSERVATION	DEDUCTIO
1. Place little of Q at spatula end and burn in a flame.		
2. To little of Q in a tube add water and shake.		
3. To little of Q in a tube add excess dil NAOH followed by adding iodine solution drop by		

drop until in excess.. Heat then cool.		
4. To little of Q in a tube, adddil H_2SO_4 followed by dil $K_2Cr_2O_7$ then heat to boiling.		
5. To little of Q, add drops of 2,4-dinitrophenylhydrazine followed by dil H_2SO_4		

The nature of Q is

Functionality of Q is

END.

Success to the hardworking.