Name .................................................................................... U0025/…… Combination………………….

**Kibuli Sec School**

**Uganda Advanced Certificate Examinations**

**Mock 2016**

**Chemistry P525/3**

**Time allowed: 3houirs 15 minutes Dtae 25th June, 2016 (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:

1. The value of n, water of crystallization in FA1
2. 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 cm3 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 cm3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Run | Trial | 1 | 2 | 3 |
| Final reading cm3 |  |  |  |  |
| Initial reading cm3 |  |  |  |  |
| Volum of FA1 used cm3 |  |  |  |  |

Calculate;

1. Mean titre.
2. Moles of iodine in the pipetted volume.
3. Moles of FA1 in mean titre.

I2(aq) + S2O32-(aq) 2I-(aq) S4O62-(aq))

1. Molarity of FA1
2. Value of n.

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

1. Percentage of awater in FA1

1b) Pipette 20.0 or 25.0cm3 of FA3. Place it in a 250cm3 volumetric flask. Make up the solution to 250cm3 with water. Shake well to ensure uniformity. The pipette 20.0 or 25.0cm3 of the diluted solution to a clean flask. Add 5cm3 of 2M H2SO4 followed by 5cm3 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 cm3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Run | Trial | 1 | 2 | 3 |
| Final reading cm3 |  |  |  |  |
| Initial reading cm3 |  |  |  |  |
| Volum of FA1 used cm3 |  |  |  |  |

Calculate;

1. Mean titre.

ii) Moles of FA FA1 in mean titre.

1. Moles of FA3 pipetted
2. 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 6cm3 of water, shake well. Filter . Keep residue and filtrate.  Divide filtrate in 8parts |  |  |
| 1. To the first part add dil NaOH drop by drop until in excess.. |  |  |
| 1. To the 2nd add dil NH3 drop by drop until in excess. |  |  |
| 1. To the 3rd add drops of sodium carbonate solution. |  |  |
| 1. 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 HNO3 drop by drop until in excess. Divide solution in six parts. |  |  |
| 1. To the first add dil NaOH drop by drop until in excess. |  |  |
| 1. To 2nd add dil. NH3 solution drop by drop until in excess. |  |  |
| 1. To 3rd add dil HCl solution then warm mixture to boiling. |  |  |
| 1. To 4th add drops of potassium chromate solution. |  |  |
| 1. To 5th add drops of lead(II) nitrate solution, heat the mixture to boiling. |  |  |
| 1. To 6th add drops silver nitrate solution. |  |  |
| 4. Transfer the residue to a clean tube add dil.HNO3 solution. Divide the solution in four parts |  |  |
| 1. To the 1st add dil NaOH solution drop by drop until in excess. |  |  |
| 1. To the 2nd add dil NH3 drop by drop until in excess. |  |  |
| 1. To the 3rd add a spatula end full of ammonium chloride the add dil NH3 drop by drop until in excess. |  |  |
| 1. To the 4th add sodium bismuthate followed with drops of conc HNO3 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. |  |  |
| 1. To little of Q in a tube add water and shake. |  |  |
| 1. 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. |  |  |
| 1. To little of Q in a tube, adddil H2SO4 followed by dil K2Cr2O7 then heat to boiling. |  |  |
| 1. To little of Q, add drops of 2,4-dinitrophenylhydrazine followed by dil H2SO4 |  |  |

The nature of Q is

Functionality of Q is

**END.**

**Success to the hardworking.**