NAME...............................................................................................................................

INDEX NO.....................................................SIGNATURE................................................

**P525/3**

**CHEMISTRY PRACTICAL**

**PAPER 3**

**JULY/AUGUST 2016**

**3¼HOURS**

NTUNGAMO PRIVATE SECONDARY SCHOOLS

JOINT MOCK EXAMINATIONS

Uganda Advanced Certificate of Education

**CHEMISTRY PRACTICAL**

**PAPER 3**

3HOURS 15MINUTES

**INSTRUCTIONS TO CANDIDATES:**

* Answer **all** questions
* Record your answers on this question paper in the spaces provided
* Mathematical tables and non-programmable scientific electronic calculators may be used
* Reference books (i.e. textbooks or books on qualitative analysis etc.) should **NOT** be used
* Candidates are **NOT** allowed to start working with the 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
* (May use H=1.0, C= 12.0, O=16.0)

|  |  |  |  |
| --- | --- | --- | --- |
| **FOR EXAMINER’S USE ONLY** | | | |
| **Q 1** | **Q2** | **Q3** | **TOTAL** |
|  |  |  |  |

1. **Q** is an organic acid with one of the following as its molecular structure.

1. HOOC – CH2 COOH
2. HOOC – CH2 CH2 COOH
3. HOOC CH = CH COOH

1. HOOC CH2 CH2CH2COOH
2. HOOCCOOH

**You are required to identify the acid Q from the results of the following experiment**

**(a). Procedure**

Solution FA1 contain 11.39g of the acid **Q** per litre of solution. Solution FA2 contains 1.70g of hydroxide ion per litre of solution. Pipette 10.0cm3 of solution FA1 conical flask. Titrate this solution with solution FA2 from the burette using indicator provided. Repeat the procedure at least three times more to get consistent results. Record all your readings in the table below.

**Results:**

Volume of pipette used =..........................................cm3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Titration number | 1 | 2 | 3 | 4 |
| Final reading/cm3 |  |  |  |  |
| Initial reading/cm3 |  |  |  |  |
| Volume of FA2 used/cm3 |  |  |  |  |

Volumes of FA2 used to make average =......................................cm3

Average volume of FA2 =.............................................................cm3

(b) (i). Calculate the molarity of **FA2**

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(ii). Calculate the molarity of **FA1**

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(iii). Hence calculate the molecular mass of **Q**.

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(c). Calculate the molecular mass of the acids

(i). HOOCCH2COOH………………….............................................................................

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(ii). HOOCCH2CH2COOH………………………………………………………………………………

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(iii). HOOCCH = CHCOOH…………..………………………………………………………………..

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(iv). HOOCCH2CH2CH2COOH……….…………………………………………………………………

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(v). HOOC = COOH……………………………………………………………………………………….

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(d). Add few drops of bromine water or acidified potassium permanganate solution drop wise to a small volume of solution FA1 (1cm3).

(i). What do you observe?

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(ii). From the results of your experiment and calculations in (b), identify acid Q

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2. **You are provided with substance W which contains three cations and two anions. Carry out the following tests to identify the cations and anions**

|  |  |  |
| --- | --- | --- |
| **TEST** | **OBSERVATIONS** | **DEDUCTIONS** |
| (a). Heat a spatula end-full of **W** in a dry test tube gently until there is no further change. |  |  |
| (b). To two spatula end-fulls of W in a test tube, add 8cm3 of water. Shake thoroughly, then filter. |  |  |
| (c). Divide the filtrate into five parts  (i). To first part, add sodium hydroxide drop wise until in excess. |  |  |
| (ii). To second part add ammonia solution drop-wise until in excess. |  |  |
| (iii). To third part add three drops of potassium hexacyanoferrate (III) solution |  |  |
| (iv). To fourth part, add three drops of lead nitrate solution. |  |  |
| (v). To fifth part add little nitric acid, followed by little barium nitrate solution |  |  |
| (d). Transfer the residue in a test tube. Add dilute nitric acid drop wise until all dissolve. Divide the solution into four parts |  |  |
| (i). To first part, add sodium hydroxide solution drop-wise until in excess |  |  |
| (ii). To second part, add ammonia solution until in excess |  |  |
| (iii). To third part, add two drops of potassium chromate solution |  |  |
| (iv). To fourth part, add two drops of potassium iodine solution |  |  |
| (e). To little of W in a test tube add little sodium hydroxide solution and warm |  |  |

(f). Identify the

(i). Cations

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(ii). Anions

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3. **You are provides with substance X which is organic. Carry out the following tests to identify the nature of X. Record your observations and deductions in the table below.**

|  |  |  |
| --- | --- | --- |
| **TEST** | **OBSERVATIONS** | **DEDUCTIONS** |
| (a). Burn two drops of X on a crucible lid or end of a spatula. |  |  |
| (b). To 1cm3 of X, add 1cm3 of distilled water. Test the PH. |  |  |
| (c). To 2cm3 of X, add 1cm3 of acidified potassium dichromate solution and warm. Divide the solution into two parts |  |  |
| (i). To first part add three drops Brady’s reagent. |  |  |
| (ii). To second part, add three drops of acidified potassium permanganate and warm. |  |  |
| (d). To 1cm3 of X add ½cm3 of Luca’s reagent. |  |  |
| (e). To 1cm3 of X add 3cm3 of iodine in potassium iodide solution. Add dilute sodium hydroxide solution drop-wise until the colour of iodine is just discharged and warm |  |  |

(f). Identify X

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**END**