**PRACTICAL TEST – TITRATIONS**

|  |  |
| --- | --- |
| **Section** | **Marks** |
| Can fill volumetric flask up to the line | / 2 |
| Can consistently reach an end point | / 2 |
| Accuracy and precision of titre volumes | / 8 |
| **TOTAL:** | **/ 12** |

***Overview:***

In this practical test you will prepare a diluted solution of acetic acid from commercial vinegar. The acetic acid will be titrated against standardised sodium hydroxide.

**Solutions supplied:**

* A standard solution of NaOH (150 mL)
* Commercial vinegar solution (50 mL - undiluted)
* Phenolphthalein indicator
* Distilled water

Please note that marks will be deducted for unsafe behaviour. See back page for details.

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**Part 1: Dilution of vinegar**

Commercial vinegar is much more concentrated than the sodium hydroxide we will use, so it will require dilution before it can be titrated. Use a 20.00 mL volumetric pipette and a 250.0 mL volumetric flask to prepare a diluted vinegar solution.

***IMPORTANT:*** *During this titration you will need to show the teacher a volumetric flask with 250.0 mL of solution. It is recommended that you do this while making up your solution during Part 1. Show the full volumetric flask before inverting the flask as some of the liquid will stick to the stopper during the inversion process.*

**Part 2: Titration against ~0.1 M sodium hydroxide**

This titration will be performed with the sodium hydroxide solution in the burette and 20.0 mL of diluted vinegar in a conical flask. Perform a number of titrations until you have achieved consistent results.

***IMPORTANT:*** *During this titration you will need to show the teacher two conical flasks which are at the correct endpoint for your chosen indicator. You should show both conical flasks at the same time so that the consistency of your endpoint can be evaluated.*

**Part 3: Packing Up**

* Pour all unused solutions down the sink.
* Return the glassware to its original location (e.g. titrations box)
* **Ensure that all benches are fully wiped and that no chemicals have been spilt.**

Note that marks will be **deducted** for the following during the experiment:

|  |  |
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| **Potential mark deductions** | **Teacher mark** |
| Needs reminder to wear safety glasses correctly while working  *(-2 marks per occurrence)* |  |
| Filling up burette by pouring liquids above eye level  *(-2 marks per occurrence)* |  |
| Leaves funnel sitting in the burette during a titration  *(-1 mark per occurrence)* |  |
| Not leaving the burette tap open when it is packed away  *(-2 marks)* |  |
| Did not clean up, rinse and put away equipment at end of experiment  *(-2 marks for first piece of equipment, -1 for each additional piece.)* |  |
| **Presents a danger to others by leaving chemical spills on the benchtops *(-50% of mark)*** |  |

**RESULTS**

Repeat the experiment until you have at least three concordant titre values. You do not need to fill in the entire table. Only continue the experiment until you have achieved consistent results.

Once finished,  **circle** the concordant titre values at the end of your experiment and place an **X** underneath any unused titre volumes.

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| --- | --- | --- | --- | --- | --- |
|  | **Titration 1** | **Titration 2** | **Titration 3** | **Titration 4** | **Titration 5** |
| **Initial volume (mL)** |  |  |  |  |  |
| **Final volume (mL)** |  |  |  |  |  |
| **Titre volume (mL)** |  |  |  |  |  |

**Average titre volume: \_\_\_\_\_\_\_\_**