**‘Identifying Unknowns’ – Practical Test Information Sheet**

Your Semester 2 practical test will be featured around the identification of organic substances. Your identification will rely on chemical tests, data from empirical formula calculations and other observations.

You will be provided with four colourless samples of organic compounds. Each compound will contain one of the following groups:

* Alcohol (1°, 2° or 3°)
* Ketone
* Aldehyde
* Carboxylic acid
* Ester

You will also be provided with the following chemicals:

* 1 mol L-1 hydrochloric acid
* 1 mol L-1 sodium hydroxide
* Acidified potassium permanganate solution
* Acidified sodium dichromate solution
* Concentrated sulfuric acid
* Ethanoic acid
* Ethanol
* Universal indicator
* Calcium carbonate powder

Standard laboratory equipment, including beakers, Bunsen burners, test tubes, kettle, thermometer and spatulas will also be provided.

During your one-hour time period you are to conduct whichever tests are necessary to identify the functional group present in each molecule. It is not expected that you will use all chemicals. So that you can be efficient with your time, you should use simple tests to narrow down possible options and then only do time-consuming tests if necessary.

For each substance you will need to state what tests have been performed and what inferences have been drawn from those tests (see example on back page). Then, using information from the empirical formula and observations you will need to draw and name one possible chemical structure for the substance.

You will be allowed a data sheet, however you will not have access to other materials in this test. You will need to have a good awareness of the structure and chemical reactivity of each functional group to be able to succeed in this test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Substance: A** | | **Molecular formula**: | | |
| **INFORMATION GAINED FROM CHEMICAL TESTS AND OTHER OBSERVATIONS** | | | | |
| **Test #** | **Description of test / observation** | | | **Inferences** |
| 1 | Added universal indicator.  Green. | | | Not carboxylic acid |
| 2 | Added acidified Cr2O72-  Slow colour change (orange → green) | | | Not X, Y…  Could be Z… |
| 3 |  | | |  |
| 4 |  | | |  |
| 5 |  | | |  |
| **Name the functional group present** | | |  | |
| **Drawing and name of a possible structure that matches all data:** | | | | |

|  |  |
| --- | --- |
| **Criteria** | **Marks** |
| Clarity in logic | \_\_\_ / 2 |
| Correct functional group | \_\_\_ / 1 |
| Structure | \_\_\_ / 1 |
| Name | \_\_\_ / 1 |