

**Insert School Logo**

**Semester One**

**Task 3 Validation 2023**

**Question/Answer booklet**

**CHEMISTRY**

**UNIT 1**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Teacher: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***TIME ALLOWED FOR THIS PAPER***

Reading time before commencing work: Five minutes

Working time for the paper: Twenty minutes

***MATERIALS REQUIRED/RECOMMENDED FOR THIS PAPER***

**To be provided by the supervisor:**

This Question/Answer Booklet

Chemistry Data Book

**To be provided by the candidate:**

Standard items: pens, pencils, eraser or correction fluid, ruler, highlighter.

Special items: calculators satisfying the conditions set by the SCSA for this subject.

***IMPORTANT NOTE TO CANDIDATES***

No other items may be taken into the examination room. It is **your** responsibility to ensure that you do not have any unauthorised notes or other items of a non-personal nature in the examination room. If you have any unauthorised material with you, hand it to the supervisor **before** reading any further.

1. In this experiment, we separated salt from seawater. Explain why we wanted to do this.

(1 mark)

1. Our reason for performing a separation is different to the typical reasons most people try to separate complex mixtures. Using an example, explain one other reason people might want to perform a separation on a mixture.

(2 marks)

1. In this experiment, it would have been easier to simply evaporate the water off instead of distilling it. Explain why we instead chose to collect the water, reflecting on any additional data collected from that water and what that observation indicated.

(3 marks)

1. One method of removing contaminants from water used by Water Corp to produce clean drinking water is sedimentation (allowing any undissolved dust and rocks to settle to the bottom) and decantation (pouring the water off the top). Compare this method to distillation, and explain whether this could be a viable method to separate salt from seawater.

(2 marks)

1. Below is a table of results for a group of students who performed 5 different evaporation experiments to determine the salt content in the dead sea.

|  |  |  |  |
| --- | --- | --- | --- |
| **Trial** | **Volume of Water (mL)** | **Amount of Salt (g)** | **Salinity (g/L)** |
| 1 | 500 | 613 |  |
| 2 | 250 | 305 |  |
| 3 | 500 | 587 |  |
| 4 | 250 | 287 |  |
| 5 | 500 | 632 |  |

1. Calculate the salt content for the first and second trials in terms of the amount of grams per litre.

(3 marks)

1. Complete the rest of the table.

(3 marks)

1. Calculate the mean salinity for the dead sea based on the student’s data, and compare it to the measured salinity in 2011 which was 342 g/L. Evaluate whether this was a valid experiment.

(4 marks)

1. In the evaporation experiment, it was noted that at one point the temperature of water was 105oC, higher than the boiling point of pure water. Explain why, and predict whether you would expect the temperature to get higher, lower, or stay the same as the experiment went on.

(2 marks)