



## Notice of Assessment Task

### Year 12 *Chemistry*

### Scientific Investigation

<b>Date of initial notification:</b> Thursday 23 November 2023 Term 4, Week 7	<b>Date of submission of task: Week 8</b> Thursday 7 December 2023 Term 4, Week 9
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<b>Teacher:</b> Mrs Maynard & Miss Mar	<b>Task Number:</b> 1
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<b>Time Allowed:</b> 60 Minutes	<b>Weighting of task:</b> 20%
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<b>Course Component/Focus area/topic/module:</b> Module 5: Equilibrium and Acid Reactions
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#### Task Description

#### Inquiry Questions

What factors affect equilibrium and how?  
How does solubility relate to chemical equilibrium?

#### **Part A - First Hand Investigation Plan & Identification of Unknown Ionic Solution (20 marks) (Outcome CH12-2, CH12-3 and CH12-6)**

Students are to design an investigation which allows you to distinguish an unknown ionic salt, based on precipitation testing of its cation and anion.

There will be solutions labelled A, B, C and D. The solutions that are in these bottles are ammonium hydroxide, potassium iodide, sodium carbonate, silver nitrate and zinc sulfate.

Your task will be to determine which bottle matches to the ionic salt solution.

Students are to present the information using the template provided outlining the materials and procedure (as a method or flowchart) demonstrating the steps to be taken.

Students are permitted to bring their flow chart/method with them and are able to access it during the practical component of the task.

Students will be required to evaluate their results and write balanced chemical equations and ionic equations for any chemical reactions that occur, following correct chemistry conventions when writing them, including describing the ion's valencies and physical states correctly.

#### **Part B – In-Class Test (20 marks) (Outcomes CH12-6 and CH12-12)**

Students are required to complete theoretical questions based around the concepts on the Le Chatelier's Principle, the factors which affect chemical equilibria, and the relationship between solubility and equilibrium reactions.

**Outcomes/Competencies to be assessed in this task:**

CH12-2	Designs and evaluates investigations in order to obtain primary and secondary data and information
CH12-3	Conducts investigations to collect valid and reliable primary and secondary data and information
CH12-6	Solves scientific problems using primary and secondary data, critical thinking skills and scientific processes
CH12-12	Explains the characteristics of equilibrium systems, and the factors that affect these systems

**Feedback: How will I receive feedback on this task?**

- Written
- Verbal

**Marking Criteria – Part A**

The student <b>designs</b> and completes an outstanding investigation that fulfils the aim of identifying the unknown solutions. All components of the investigation are conducted to ensure the <b>collection</b> of valid and accurate primary data on both unknown ionic solutions in a safe and effective manner occurred. The evaluation <b>describes</b> in detail the chemical reactions which have taken place using balanced chemical equations, as well as ionic equations. A comprehensive <b>analyse</b> of their results is provided that <b>justifies</b> the results of each test leading to the identification of one of the unknown ionic solutions.	17-20 marks
The student <b>designs</b> and completes a thorough investigation that fulfils the aim of identifying the unknown solutions. Most components of the investigation are conducted to ensure the <b>collection</b> of valid and accurate primary data on both unknown ionic solutions in a safe and effective manner occurred. The evaluation <b>describes</b> in detail the chemical reactions which have taken place using balanced chemical equations, as well as ionic equations, with minor errors. A thorough <b>analysis</b> of their results is provided that <b>justifies</b> the identification of one of the unknown ionic solutions, neglecting some aspects of logically deducing the results.	13-16 marks
The student <b>designs</b> completes a sound investigation that fulfils the aim of identifying the unknown solutions. Most components of the investigation are conducted to ensure the <b>collection</b> of valid and accurate primary data on both unknown ionic solutions in a safe and effective manner occurred. The evaluation <b>describes</b> most the chemical reactions which have taken place using balanced chemical equations, and some ionic equations correctly, or all with some errors. An <b>explanation</b> of their results is provided that <b>justifies</b> the identification of one of the unknown ionic solutions, with some incorrect assumptions included.	9-12 marks
The student <b>designs</b> and completes a basic investigation that fulfils the aim of identifying the unknown solutions. Aspects of the investigation conducted allow the <b>collection</b> of primary data on both unknown ionic solutions in a safely. The evaluation <b>describes</b> basic chemical reactions which have taken place with major errors. A brief <b>explanation</b> of their results is provided which contains extensive errors.	5-8 marks
<b>A limited identification of the unknown solid will:</b> - Attempt to <b>collect</b> and <b>identify</b> solutions	1-4 marks

- If you are absent on the day that the task is due, you **MUST** see your teacher the next day (not your next lesson) that you are present at school to show your medical certificate or produce a misadventure form (refer to your Assessment Booklet for a copy of the form).
- Exemptions and extensions for any other reason will only be determined at the discretion of the Head Teacher, and only in extenuating circumstances. You must advise the Head Teacher as soon as possible if you know you are unable to submit the task on the due date.
- All appeals must be lodged within 48hrs of receipt of the task. Students who may consider an appeal are not permitted to take their task home. The original task cannot be altered in any way prior to the appeal process. See Assessment booklet for details.

# Part A- First-Hand Investigation

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

Materials

Method /Flow Chart

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

Results

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- *Exemptions and extensions for any other reason will only be determined at the discretion of the Head Teacher, and only in extenuating circumstances. You must advise the Head Teacher as soon as possible if you know you are unable to submit the task on the due date.*
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