



# JOHN EDMONDSON HIGH SCHOOL

## Assessment Notification

Faculty: Science Course: Chemistry Year: 11

Assessment Task: Task 2: Depth Study

Assessment Weighting: 40%

Due: DEPTH STUDY TASK

Depth Study **Practical Skills Test**: During Chemistry lessons Week 7-9

Depth Study **Analysis Test in-class**: Week 10, 4<sup>th</sup> July 2024, Period 1 and 2.

Task Type: Hand in Task  In Class Task  Practical Task

### Outcomes assessed (NESA)

CH11/12-1 develops and evaluates questions and hypotheses for scientific investigation

CH11/12-2 designs and evaluates investigations in order to obtain primary and secondary data and information

CH11/12-3 conducts investigations to collect valid and reliable primary and secondary data and information

CH11/12-4 selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media

Analysing data and information

CH11/12-5 analyses and evaluates primary and secondary data and information

CH11/12-6 solves scientific problems using primary and secondary data, critical thinking skills and scientific processes

CH11/12-7 communicates scientific understanding using suitable language and terminology for a specific audience or purpose

CH11-9 describes, applies and quantitatively analyses the mole concept and stoichiometric relationships

### Task Description/Overview

**This Depth Study Task is divided into 2 components:**

Part 1: Conduct the firsthand investigation to determine the sulphate content in fertiliser (15 marks)

Part 2: Open log book Depth Study Analysis Test (45 marks)

## Detailed Assessment Task Description

### Part 1: Conduct the firsthand investigation to determine the sulphate content in fertiliser

Students are to design and perform a primary investigation to determine the percentage composition of sulfate in fertiliser.

In total, students will be given a maximum of 5 lessons and 4g of fertiliser.

The sulfate is present as ammonium sulfate in the fertiliser.

Students will work in groups of 2 or less for the practical component where they will share the method and results. However, the work in the logbook must be conducted individually. Students will need to conduct secondary research to design an appropriate method and develop an in-depth risk assessment. Students must formulate a plan in their logbook for completing the depth study within the given lessons as no additional lessons or lunchtimes will be allowed. Students will also need to order equipment the day before their lesson. Prior to commencing the practical work, students must show their class teacher their risk assessment.

#### Lessons allocated.

List of **special equipment** provided in the lab:

Sintered glass filter

Side arm conical flask

Rubber tubing

Mortar and pestle.

Quantitative filter paper

0.5M Barium chloride and 0.1M Silver Nitrate (if needed)

Period	Week, Day and Date

#### In groups of TWO for practical investigation:

You will plan and conduct an investigation to determine the sulphate content in fertiliser.

Your investigation will need to be written up in your LOGBOOK.

In this task you are required to:

1. Complete Background research on precipitation reaction, gravimetric analysis.
2. Write an aim, hypothesis, risk assessment.
3. Equipment list with appropriate quantities.
4. Draft a method (inclusive of dependent, independent and control variables). Final method must be valid, accurate and reliable.
5. Conduct the experiment to collect data and note any observations.
6. Analyse results using calculations
7. Justify errors in results /investigations and suggests improvements. (include sources of errors)
8. Draw valid conclusions.

9. Communicate your findings in an appropriate scientific genre i.e., Scientific report

Class time will be allocated **(5 periods)**

Your submission must include a Scientific Report (in the log book) completed individually and in your own words.

## **Part 2: Open logbook Depth Study Analysis Test (45 marks)**

Students will then sit a skills-based test during period 1 and 2 on Thursday, where they are to bring in their depth study logbook for reference.

All work in the given logbook must be handwritten (excluding images and the reference list). Logbooks that contain typed work will not be allowed into the test.

The logbook will be handed in at the conclusion of the test.

The test is broken up into **two sections:**

**Section I** will assess working scientifically skills developed through the practical component conducted in *Part 1*, analysis of their first-hand investigation and given data to find the sulfate content in fertiliser.

**Section II** will assess calculation-based skills from Module 2, Quantitative Chemistry, from Inquiry Question 1, 2 and 3.

*Module 2 describes, applies and quantitatively analyses the mole concept and stoichiometric relationships CH11-9*

**Inquiry question 1:** What happens in chemical reactions?

- balancing chemical equations
- solving problems regarding mass changes in chemical reactions

**Inquiry question 2:** How are measurements made in chemistry?

- Calculating empirical formula
- Calculating molecular formula
- Using Avogadro's constant
- Calculating moles of compounds  $n = m / MM$
- percentage composition calculations
- Calculations involving limiting reagents

**Inquiry question 3:** How are chemicals in solutions measured?

- $c = n/V$
- Dilutions
- Calculations to make a primary standard

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<b>Assessment Criteria</b>		
<b>Grade</b>	<b>Description</b>	<b>Mark Range</b>
<b>Outstanding (O)</b>	The student has an extensive knowledge and understanding of the content and can readily apply this knowledge. In addition, the student has achieved a very high level of competence in the processes and skills and can apply these skills to new situations	<b>84.5-100</b>
<b>High (H)</b>	The student has a thorough knowledge and understanding of the content and a high level of competence in the processes and skills. In addition, the student is able to apply this knowledge and these skills to most situations.	<b>69.5-84</b>
<b>Sound (S)</b>	The student has a sound knowledge and understanding of the content and has achieved a good level of competence in the processes and skills.	<b>49.5-69</b>
<b>Basic (B)</b>	The student has a basic knowledge and understanding of the content and has achieved a basic level of competence in the processes and skills	<b>27.5-49</b>
<b>Limited (L)</b>	The student has an elementary knowledge and understanding in a few areas of the content and still requires further work to achieve competence in the processes and skills.	<b>0-27</b>

### **Satisfactory completion of courses**

A course has been satisfactorily completed, when the student has:

- Followed the course developed/endorsed by the NSW Educational Standards Authority (NESA)
- Applied himself/herself with diligence and sustained effort to the set tasks and experiences provided in the course.
- Achieved some or all of the course outcomes

