



JOHN EDMONDSON HIGH SCHOOL

Assessment Notification

Faculty: Science Course: Chemistry Year: HSC

Assessment Task: Task 2 Processing Skills and Written Task

Assessment Weighting: 25% Due: 29th March 2023, Term 1, Week 10 Periods 3 and 4

Task Type: In Class

Outcomes assessed (NESA)

- CH11/12-4 selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media
- 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
- CH12-12 explains the characteristics of equilibrium systems, and the factors that affect these systems

Syllabus Covered:

Module 5 – Equilibrium and acid reactions

1. Inquiry question: What happens when chemical reactions do not go through to completion?

- conduct practical investigations to analyse the reversibility of chemical reactions, for example: – cobalt (II) chloride hydrated and dehydrated – iron (III) nitrate and potassium thiocyanate – burning magnesium – burning steel wool (ACSCH090)
- model static and dynamic equilibrium and analyse the differences between open and closed systems (ACSCH079, ACSCH091)
 - analyse examples of non-equilibrium systems in terms of the effect of entropy and enthalpy, for example: – combustion reactions – photosynthesis
- investigate the relationship between collision theory and reaction rate in order to analyse chemical equilibrium reactions (ACSCH070, ACSCH094)

2. Inquiry question: What factors affect equilibrium and how?

- investigate the effects of temperature, concentration, volume and/or pressure on a system at equilibrium and explain how Le Chatelier's principle can be used to predict such effects, for example: – heating cobalt (II) chloride hydrate – interaction between nitrogen dioxide and dinitrogen tetroxide – iron (III) thiocyanate and varying concentration of ions (ACSCH095)
 - explain the overall observations about equilibrium in terms of the collision theory (ACSCH094)
- examine how activation energy and heat of reaction affect the position of equilibrium

3. Inquiry question: How does solubility relate to chemical equilibrium?

- describe and analyse the processes involved in the dissolution of ionic compounds in water
- investigate the use of solubility equilibria by Aboriginal and Torres Strait Islander Peoples when removing toxicity from foods, for example: – toxins in cycad fruit

Task Description/Overview

This task will include multiple choice and extended response style questions to assess the research you completed around the provided syllabus content points and working scientifically outcomes. The research you completed will require you to produce TWO, A4 sheets of paper(double sided) which you may bring into the task.

Your research should include notes on:

- Primary investigation conducted in class to analyse the reversibility of chemical reactions. Distinguish reversible and irreversible reactions with examples.
- Explaining the modelling of the static and dynamic equilibrium. Analyse the differences between open and closed systems.
- Relationship between collision theory and reaction rate to analyse chemical equilibrium reactions
- Define Entropy and Enthalpy. Analyse combustion reactions and photosynthesis as examples of non-equilibrium systems
- Define Le Chatelier's principle and how it could be used to predict effects of temperature, concentration, volume and pressure on a system at equilibrium using examples:
 - heating cobalt (II) chloride hydrate
 - interaction between nitrogen dioxide and dinitrogen tetroxide
 - iron (III) thiocyanate and varying concentration of ions
- Explain the observations about the equilibrium using Collision Theory
- Explain, using examples, how activation energy and heat of reaction affect the position of equilibrium
- Describe and analyse the processes involved in the dissolution of ionic compounds in water
- Investigate the use of solubility equilibria by Aboriginal and Torres Strait Islander Peoples when removing toxicity from foods, for example: – toxins in cycad fruit. A flowchart to summarise the processes used, with examples, could be used.

Detailed Assessment Task Description

During class time (Period 3 and 4 on March 29th, 2023), complete questions based on Module 5.

You can bring with you TWO, double sided A4 page of handwritten notes (including diagrams) covering the syllabus content outlined in this notification. These notes will NOT be marked.

Duration of the Written Task: 90 Minutes

Total Marks: 50

TWO SECTIONS

10 Multiple Choice Questions – 1 Mark each

40 Marks for short answer and extended response questions including graphing, firsthand investigations completed during the course and calculations.

This in class task assesses your ability to:

- Process information and demonstrate your understanding of the content
- Analyse data and problem solve using chemistry understanding and calculations
- Graph data and analyse trends
- Apply your knowledge to demonstrate understanding

Data sheet and periodic table will be provided

Equipment needed:

- Pen, Pencil, Eraser, Calculator and Ruler.

Assessment Criteria		
Grade	Description	Mark Range
Outstanding (O)	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.	84.5-100%
High (H)	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.	69.5-84%
Sound (S)	The student has a sound knowledge and understanding of the content and has achieved a good level of competence in the processes and skills.	49.5- 69%
Basic (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	27.5-49%
Limited (L)	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.	0-27%

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