



# JOHN EDMONDSON HIGH SCHOOL

## Assessment Notification

**Faculty: Science Course: Chemistry Year: HSC**

**Assessment Task: Research Task and In-Class Questions**

**Assessment Weighting: 20% Due: Term 4, Week 7, 20/11/2023**

**Task Type: Hand-in Task  In Class**

### Outcomes assessed (NESA)

- develops and evaluates questions and hypotheses for scientific investigation CH11/12-1
- designs and evaluates investigations in order to obtain primary and secondary data and information CH11/12-2
- conducts investigations to collect valid and reliable primary and secondary data and information CH11/12-3
- selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media CH11/12-4
- analyses and evaluates primary and secondary data and information CH11/12-5
- solves scientific problems using primary and secondary data, critical thinking skills and scientific processes CH11/12-6
- Communicates scientific understanding using suitable language and terminology for a specific audience or purpose CH11/12-7
- Analyses the structure of, and predicts reactions involving, carbon compounds CH12-14
- Describes and evaluates chemical systems used to design and analyse chemical processes CH12-15

### Syllabus covered: Module 7: Organic Chemistry

#### Polymers

**Inquiry question:** What are the properties and uses of polymers?

Students:

- model and compare the structure, properties and uses of addition polymers of ethylene and related monomers, for example:
  - polyethylene (PE)
  - polyvinyl chloride (PVC)
  - polystyrene (PS)
  - polytetrafluoroethylene (PTFE) (ACSCH136)
- model and compare the structure, properties and uses of condensation polymers, for example:
  - nylon
  - polyesters

## Hydrocarbons

**Inquiry question:** How can hydrocarbons be classified based on their structure and reactivity?

- Examine the environmental, economic, and sociocultural implications of obtaining and using hydrocarbons from the Earth (CIF10.4)

## Alcohols

**Inquiry question:** How can alcohols be produced, and what are their properties?

- Compare and contrast fuels from organic sources to biofuels, including ethanol (CIF 11.6)
- investigate the production of alcohols, including:
  - fermentation

## Module 8: Chemical Synthesis and Design

**Inquiry question:** What are the implications for society of chemical synthesis and design?

- evaluate the factors that need to be considered when designing a chemical synthesis process, including but not limited to:
  - availability of reagents
  - reaction conditions
  - yield and purity
  - industrial uses (fuels)
  - environmental, social and economic issues

Questions regarding this inquiry question will be about the industrial production of ethanol.

## Task Description/Overview

TOTAL MARKS: 60

**Part 1: Research, summary, and bibliography (10 marks). Bibliography to be submitted on Canvas by 8:25am. Bring the research summary to class November 20.**

**Part 2: In-class questions (50 marks) using the research summaries.**

## Detailed Assessment Task Description

### Research and in-class questions

**Task:** Secondary source research and in-class questions

For this activity, you will research and summarise ALL the syllabus points covered above.

Your summary should include, but not be limited to:

- Diagrams/drawings/models of **ALL** addition and condensation polymers mentioned in the syllabus
- Chemical equations representing the production of addition polymerisation process and the condensation polymerisation process.
- The environmental, economic, and sociocultural implications of obtaining and using hydrocarbons from the earth.
- Relevant chemical formula for the hydrocarbons obtained from crude oil and equations representing any chemical reactions hydrocarbons from the earth undergo (e.g., combustion)
- Compare and contrast fossil fuels with biofuels including ethanol and at least one other biofuel (e.g. biodiesel)
- Relevant equations illustrating the production and use of biofuels.
- Advantages and disadvantages of different types of fuels.
- An evaluation of the factors that need to be considered when designing a chemical synthesis process to produce ethanol by fermentation.
- Quantitative data to support your argument.

Your summary can be up to 4, double-sided, handwritten A4 pages. This summary can be brought into class to answer the in class questions.

You need to complete a bibliography of at least 9 different sources. This is to be submitted on Canvas by 8:25am.

### **Marking Criteria**

Part 1: 10 Marks

At least 9 resources referenced correctly according to the APA 7<sup>th</sup> edition referencing system, <https://jedmondson-h.schools.nsw.gov.au/assessment/writing-a-bibliography.html>

Submit on Canvas by 8:25am.

Part 2: 50 Marks. 10 multiple choice questions (10 marks), 40 marks short answers and extended responses. Use the research summary to complete these questions in class.

<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