THE RIVERS SECONDARY COLLEGE
The heart of secondary education for Lismore

Assessment Task Notification

RICHMOND RIVER HIGH CAMPUS

Task Number	3	**Task Name**	Practical Task
Course	12 Chemistry	**Faculty**	Science
Teacher	Ms Hinchey	**Head Teacher**	Mr Yates
Issue date	Friday 10th May 2024	**Due date**	Tuesday 28th May 2024
Focus (Topic)	Combustion of alcohols	**Task Weighting**	20%

Outcomes

A student:
CH 12-1 develops and evaluates questions and hypotheses for scientific investigation
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
CH12-4 selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media
CH12-5 analyses and evaluates primary and secondary data and information
CH12-14 analyses the structure of, and predicts reactions involving, carbon compounds

Task description

This Practical Assessment Task will be performed during class time during the triple on Tuesday 28th May 2024.
You will be required to design and perform an experiment to calculate the heat of combustion of three primary alcohols (methanol, ethanol and propanol) and compare your values with the standard (IUPAC) values and account for any error.
You will also be required to provide chemical equations showing complete combustion for each alcohol and one example of incomplete combustion for each alcohol.

For assessment, you are required to give to your teacher

- An experimental report that includes a risk assessment for the experiment, a method to collect valid and reliable results, your calculations and a discussion regarding any deviation of your results to the published results.
- A correctly formatted reference for the published results used for comparison with your experimental results.

In order to produce quality work, you will need to:
Design and perform an experiment to determine the heat of combustion of methanol, ethanol and propanol including the following:

- Identify hazards in the experiment and describe methods to reduce the risk of injury or accident.
- Sources of error in data collection and how to minimise them in order to collect reliable data
- Perform calculations to determine your experimental values for the heat of combustion of the alcohols
- Suggest causes for any deviation of your results to the published results.

You will be provided with spirit burners, thermometers, distilled water, conical flasks, copper cans, an electronic balance as well as the equipment regularly available in the laboratory. You must decide on the most appropriate equipment to collect reliable data.

Task Submission

Your written report is to be handed to your teacher at the end of the triple period on **Tuesday 28th May 2024** at 11am.

Marking Criteria

Section of Task	Marks
Risk assessment: (CH12-3)	
Correctly identifies all associated risks with the experiment and provides achievable solutions to reduce the chance of injury or accident.	5
Correctly identifies some risks associated with the experiment and provides solutions to reduce the chance of injury or accident.	3-4
Provides some risks associated with the experiment but misses significant detail and provides insufficient risk management strategies.	2
Limited identification of risks and risk management for the experiment.	0-1
Experimental Method: (CH12-2,3,6)	
Provides a detailed experimental method that will collect valid, accurate and reliable data. Sources of error have been minimised through outstanding experimental design including choice of materials and data collection strategies. Evidence of any changes that needed to be made as problems arose.	9-10
Provides a method with moderate detail that will collect reliable data through high-level experimental design and data collection. Some sources of error have been minimised and there is some evidence of solving problems as they arose.	7 – 8
Provides a method with enough details to collect data through sound experimental design to minimise experimental error and collect data. Problems have been identified.	4 – 6
Provides a basic method designed to collect data. Significant errors in the method and no evidence of solving problems as they arise.	0 – 3
Calculations and discussion: (CH12-4,5)	
All calculations are performed correctly and expressed with the appropriate units. The experimental results are compared with published values and sources of error are clearly identified and discussed to an outstanding level.	14 – 15
Calculations are mostly correct and expressed with units. The experimental results are compared with published values. Some sources of error are identified and discussed to a sound level.	11 – 13
Some calculations are included, but with significant errors. Some units are missing or incorrect. Some sources of error are identified.	6 – 10
Calculations are mostly incorrect, and units are not included or are incorrect. Sources of error are not included.	0 – 5
Chemical equations: (CH12-14)	
A correct chemical equation, including states, is provided for the complete combustion of all three alcohols as well as a correct chemical equation for an example of incomplete combustion for each alcohol.	9 – 10
A chemical equation is provided for the complete combustion of all three alcohols as well as a chemical equation for an example of incomplete combustion for each alcohol. However, there are minor errors such as missing states or minor mistakes in balancing the equations.	7 – 8
A chemical equation is provided for the complete combustion of all three alcohols as well as a chemical equation for an example of incomplete combustion for each alcohol. However, there are significant errors in balancing the equations.	4 – 6
Incomplete chemical equations are provided for the complete combustion of all three alcohols as well as a chemical equation for an example of incomplete combustion for each alcohol. There are significant errors in balancing the equations and products and reactants may not be correct. OR only some complete equations are provided.	2– 3
Some relevant information is provided for chemical equations related to the complete and incomplete combustion of alcohols.	0 - 1
Total:	**/40**

Teacher Comments: