OCR
Oxford Cambridge and RSA

Science

OCR J815 Unit R071 Level 1/Level 2
Cambridge Nationals Certificate in Science
Unit Recording Sheet

Please read the instructions printed at the end of this form. **One** of these sheets, suitably completed, should be attached to the assessed work of **each** candidate.

Unit Title	**How scientific ideas have an impact on our lives**	**Unit Code**	**R071**	**Session**	Jan / June	**Year**				
Centre Name					**Centre Number**					
Candidate Name					**Candidate Number**					

Criteria			**Teacher Comments**	**Mark**
LO1: Be able to analyse personal and social choices related to energy supply				
MB1: 1 – 7 marks	**MB2: 8 – 13 marks**	**MB3: 14 – 18 marks**		
• **Lists** different energy sources available • **Basic** understanding of factors with influence the choice of energy supply • **Limited qualitative** analysis of efficiencies of energy transfer in electricity generation **[1 2 3 4 5 6 7]**	• **Limited** description of the different energy sources available for electricity generation • **Sound** understanding of some of the relevant factors which influence the choice of energy supply • **Limited quantitative** analysis of efficiencies of energy transfer in electricity generation **[8 9 10 11 12 13]**	• **Detailed** description of the different energy sources available for electricity generation • **Comprehensive** understanding of the relevant factors for the interest group which influence the choice of energy supply • **Complex quantitative** analysis of efficiencies of energy transfer in electricity generation and distribution • Quantitative data displayed in **appropriate** formats **[14 15 16 17 18]**		

<table>
<tr><th colspan="3">Criteria</th><th>Teacher Comments</th><th>Mark</th></tr>
<tr><td colspan="3">LO2: Understand the risks and benefits related to the applications of nuclear radiation</td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td>MB1: 1 – 4 marks</td><td>MB2: 5 – 7 marks</td><td>MB3: 8 – 10 marks</td></tr>
<tr><td>• Identifies a relevant beneficial use (application) of nuclear ionising radiation
• Lists risks and benefits of the application
• Limited justification of application in terms of benefit outweighing risk
[1 2 3 4]</td><td>• Selection of relevant beneficial uses (applications) of nuclear ionising radiation
• Some detailed analysis of applications in terms of characteristics of radiation
• Some detailed analysis of risks and benefits of energy transfer to the individual or wider society, to include a qualitative evaluation of risk
• Relevant analysis of the ways risks from the applications are reduced
[5 6 7]</td><td>• Selection of a wide range of beneficial uses (applications) of nuclear ionising radiation to include healthcare, industrial and power generation examples
• Thorough analysis of applications in terms of characteristics of radiation
• Thorough analysis of the risks and benefits of energy transfer to the individual / wider society, to include a quantitative evaluation of risk
• Well justified realistic analysis of the ways risks from the applications are reduced
[8 9 10]</td></tr>
<tr><td colspan="3">LO3: Be able to measure energy transfers and calculate efficiencies</td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td>MB1: 1 – 5 marks</td><td>MB2: 6 – 9 marks</td><td>MB3: 10 – 12 marks</td></tr>
<tr><td>• When provided with method and equipment, significant support needed to set it up and to take measurements
• Some measurements taken and recorded
• When provided with equations, data substituted correctly and some calculations carried out correctly
[1 2 3 4 5]</td><td>• Independent selection of equipment to take measurements; little support needed to set up correctly
• Measurements taken and recorded using an appropriate format
• Correct equations independently selected; support needed to manipulate equations where necessary
• Some calculations carried out correctly and one outcome derived correctly
[6 7 8 9]</td><td>• Independent selection of equipment to take measurements; equipment set up correctly
• Measurements taken and recorded to appropriate accuracy and precision using an appropriate format, including use of correct units
• Correct equations independently selected and manipulated where necessary
• Both outcomes calculated correctly to appropriate numbers of significant figures
[10 11 12]</td></tr>
</table>

<table>
<tr><th colspan="3">Criteria</th><th>Teacher Comments</th><th>Mark</th></tr>
<tr><td colspan="3">LO4: Understand how human health can be improved</td><td rowspan="3"></td><td rowspan="3"></td></tr>
<tr><td>MB1: 1 – 7 marks</td><td>MB2: 8 – 13 marks</td><td>MB3: 14 – 18 marks</td></tr>
<tr><td>• Lists some of the ways in which factors affect health
• Some suggestions made for a health education programme
• Limited qualitative data displayed on the impact on health of some of the factors identified
• Some brief materials and resources produced
[1 2 3 4 5 6 7]</td><td>• Description of the way in which factors affect health of a client group of workers used to design a health education programme
• Some quantitative data displayed on the impact on health from the factors identified
• A range of relevant materials and resources produced
[8 9 10 11 12 13]</td><td>• Detailed explanation of the way in which factors affect health of a client group of workers used to design a detailed, relevant health education programme
• A range of relevant quantitative data on the impact on health of the factors identified and displayed accurately in appropriate formats
• A wide range of relevant and imaginative materials and resources
[14 15 16 17 18]</td></tr>
<tr><td colspan="3">LO5: Understand the risks and benefits of medical treatments</td><td rowspan="3"></td><td rowspan="3"></td></tr>
<tr><td>MB1: 1 – 4 marks</td><td>MB2: 5 – 7 marks</td><td>MB3: 8 – 10 marks</td></tr>
<tr><td>• Lists risks and benefits of a medical treatment
• Basic understanding of the reasons for the testing of medical treatments
• Some materials produced
[1 2 3 4]</td><td>• Simple qualitative analysis of the risks and benefits of a medical treatment
• Sound understanding of the reasons for the testing of medical treatments
• Materials are relevant to the needs of the client group
[5 6 7]</td><td>• Quantitative and qualitative analysis relevant for the client group of the risks and benefits of a medical treatment
• Thorough understanding of the reasons for the testing of medical treatments
• Materials are concise and sensitive to the needs of the client group
[8 9 10]</td></tr>
</table>

<table>
<tr><th colspan="3">Criteria</th><th>Teacher Comments</th><th>Mark</th></tr>
<tr><td colspan="3">LO6: Be able to measure the environmental effects of human activity</td><td rowspan="3"></td><td rowspan="3"></td></tr>
<tr><td>MB1: 1 – 5 marks</td><td>MB2: 6 – 9 marks</td><td>MB3: 10 – 12 marks</td></tr>
<tr><td>• When provided with method and equipment, some support needed to set up equipment and carry out the testing
• Some data collected and recorded
• Some simple visualisation of data
[1 2 3 4 5]</td><td>• Appropriate choice of measures of effects of human activity on a local environment
• Independent selection of appropriate sampling and testing methods; little support needed to select and set up the equipment needed to carry out testing
• A range of relevant data collected and recorded using an appropriate format
• Some relevant visualisation of data and calculation of simple measures such as frequency
[6 7 8 9]</td><td>• Justification of choice of measures of the effects of human activity on a local environment
• Independent selection of appropriate sampling and testing methods and the equipment needed to carry out testing; equipment set up correctly
• A range of data collected and recorded to appropriate accuracy and precision using an appropriate format, including use of correct units
• Relevant and accurate visualisation of data and correct calculation of complex measures such as indices of biodiversity
[10 11 12]</td></tr>
<tr><td colspan="3">LO7: Understand how materials we use are made from natural resources</td><td rowspan="3"></td><td rowspan="3"></td></tr>
<tr><td>MB1: 1 – 7 marks</td><td>MB2: 8 – 13 marks</td><td>MB3: 14 – 18 marks</td></tr>
<tr><td>• Lists some different materials used for a construction project
• Basic knowledge of chemical processes, including some use of word equations
• Limited qualitative analysis of the impact on the environment of the production of materials from natural resources
• Some alternative production methods or materials suggested which would have a lower environmental impact
[1 2 3 4 5 6 7]</td><td>• Some support needed for selection of a range of different materials linked to different parts of a construction project
• Sound knowledge of chemical processes, including some use of symbol equations and chemical nomenclature
• Analysis of the impact on the environment of the production of materials from natural resources, to include some data on production quantities, yields or energy budgets
• Some evaluation of alternative production methods or materials which would have a lower environmental impact
[8 9 10 11 12 13]</td><td>• Independent selection of a range of different types of materials linked to different parts of a construction project, chosen for their properties
• Detailed knowledge of chemical processes, including correct and appropriate use of balanced symbol equations and chemical nomenclature
• Thorough analysis of the impact on the environment of the production of materials from natural resources, to include relevant data on production quantities, yields and energy budgets
• Well justified realistic evaluation of alternative production methods or materials which would have a lower environmental impact
[14 15 16 17 18]</td></tr>
</table>

Criteria			Teacher Comments	Mark
LO8: Understand how the properties of materials we use are determined by structure and bonding				
MB1: 1 – 4 marks	**MB2: 5 – 7 marks**	**MB3: 8 – 10 marks**		
• **Significant support** needed to identify some different types of materials used in a **complex** product; **some simple** reasons for their use suggested • **Limited description** of the properties of selected materials and their structures • Qualitative information on the properties of materials and performance of components **[1 2 3 4]**	• **Limited support** needed for selection of a **range** of different materials used in a **complex** product; **sound** understanding of the reasons why these materials are used, with **some** links to their properties • **Limited explanation** of how the properties of these materials depend upon structure and bonding • **Some quantitative** data displayed on the properties of materials and performance of components **[5 6 7]**	• **Independent** selection of an **appropriate range** of different types of materials used in a **complex** product; **thorough** understanding of the reasons why these materials are used, **clearly** related to their properties • **Detailed** explanation of how the properties of these materials depend upon structure and bonding • **Independent** selection of **relevant** quantitative data on the properties of materials and performance of components used to support explanations • Quantitative data displayed in **appropriate** formats, including use of correct units **[8 9 10]**		
LO9: Be able to measure the properties of materials to recommend appropriate uses				
MB1: 1 – 5 marks	**MB2: 6 – 9 marks**	**MB3: 10 – 12 marks**		
• When provided with method and equipment, **some support** needed to set up and take measurements. • **Some** measurements taken and recorded • When provided with the mathematical techniques to use, **some** data processed correctly **[1 2 3 4 5]**	• **Independent** selection of equipment to take measurements; **little support** needed to set up correctly • Measurements taken and recorded using an **appropriate** format • **Support** needed to process data using **appropriate** mathematical techniques **[6 7 8 9]**	• **Independent** selection of equipment to take measurements; equipment set up correctly. • Measurements taken and recorded to appropriate accuracy and precision using an appropriate format, including use of correct units • Data processed **accurately** using **appropriate** mathematical techniques to identify trends or patterns **[10 11 12]**		
				Total/120

If this is a re-sit, please tick		Session and Year of previous submission	Jan / June	**2**	**0**			Please tick to indicate this work has been standardised internally	

Please note: This form may be updated on an annual basis. The current version of this form will be available on the OCR website (www.ocr.org.uk).

Guidance on Completion of this Form

1 **One** sheet should be used for each candidate.
2 Please ensure that the appropriate boxes at the top of the form are completed.
3 Please enter *specific* page numbers where evidence can be found in the portfolio, and where possible, indicate to which part of the text in the mark band the evidence relates.
4 Circle the mark awarded for each strand of the marking criteria in the appropriate box and also enter the circled mark in the final column.
5 Add the marks for the strands together to give a total out of 60. Enter this total in the relevant box.