

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.

<b>Unit Title</b>	<b>Materials for a Purpose</b>	<b>Unit Code</b>	<b>G630</b>	<b>Session</b>	Jan / June	<b>Year</b>	<b>2</b>	<b>0</b>		
<b>Centre Name</b>						<b>Centre Number</b>				
<b>Candidate Name</b>						<b>Candidate Number</b>				

**Evidence:** The candidate needs to produce evidence of selection of materials for **one** specified purpose and of underlying knowledge of types and properties of materials.

Criteria			Teacher Comment	Mark	Page No.
AO1(a).1: Candidate will produce an outline of the structures of at least <b>one</b> example of each of polymers and metals;  [0 1]	AO1(a).2: candidate will produce a description, with diagrams, of the structures of at least <b>two</b> examples of each of polymers and metals, stating physical properties;  [2 3]	AO1(a).3: candidate will produce a description, with diagrams, of the structures of more than <b>two</b> examples of each of polymers and metals, relating their structures to physical properties.  [4 5]			
AO1(b).1: Candidate will produce an outline of the structures of <b>at least one</b> example of each of ceramics or glasses and composite materials;  [0 1]	AO1(b).2: candidate will produce a description, with diagrams, of the structures of <b>at least two</b> examples of each of ceramics or glasses and composite materials, stating physical properties;  [2 3]	AO1(b).3 candidate will produce a description, with diagrams, of the structures of <b>more than two</b> examples of each of ceramics or glasses and composite materials, relating their structures to physical properties.  [4 5]			
AO2(a).1: Candidate will produce <b>one</b> case study in which they are asked to select materials for a stated purpose; candidate will show <ul style="list-style-type: none"> <li>evidence of researched data on the properties of materials showing</li> <li>a shortlist of possible materials that meet the requirements, giving reasons for their selection</li> <li>the material that best meets their objectives using data about the properties</li> <li>from published data, one alternative material giving reasons for alternatives;</li> </ul> [0 1 2]	AO2(a).2: candidate will produce <b>one</b> case study in which they are asked to select materials for a stated purpose; candidate will show <ul style="list-style-type: none"> <li>evidence of relevant researched data on the properties of materials</li> <li>a shortlist of possible materials that meet the objectives and constraints with reasons for their selection</li> <li>the material that best meets their objectives using data to justify their final choice</li> <li>from published data, at least one alternative material, giving reasons for alternatives;</li> </ul> [3 4 5 6]	AO2(a).3: candidate will produce <b>one</b> case study in which they are asked to select materials for a stated purpose; candidate will show <ul style="list-style-type: none"> <li>evidence of selected relevant researched data on the properties of materials</li> <li>a shortlist of possible materials that meet their objectives and constraints, fully justifying their selection</li> <li>the material that best meets their objectives using data about the properties, fully justifying their final choice</li> <li>from published data, at least two alternative material giving reasons for alternatives.</li> </ul> [7 8 9 10]			

Criteria			Teacher Comment	Mark	Page No.
<p>AO2(b).1: Candidate will complete calculations, with some assistance, of tensile stress and strain, the Young modulus and toughness from a given graph of force against extension and length and cross-sectional area of sample;</p> <p style="text-align: right;"><b>[0 1 2]</b></p>	<p>AO2(b).2: candidate will complete calculations from given equations of tensile stress and strain, the Young modulus and toughness from a given graph of force against extension and length and cross-sectional diameter of sample;</p> <p style="text-align: right;"><b>[3]</b></p>	<p>AO2(b).3: candidate will complete calculations, unaided, of tensile stress and strain, the Young modulus and toughness from a given graph of force against extension and length and cross-sectional diameter of sample, giving answers to the correct number of significant figures.</p> <p style="text-align: right;"><b>[4]</b></p>			
<p>AO3(a).1: Candidate will produce evidence of the safe use of the testing device and a report on their design and testing of the device, including</p> <ul style="list-style-type: none"> <li>• a plan and safety precautions</li> <li>• a description and diagram of their device</li> <li>• results suitably recorded</li> <li>• suitable processing of results with interpretation</li> <li>• a basic evaluation;</li> </ul> <p>candidate will use basic scientific terminology correctly, with evidence of correct punctuation and grammar;</p> <p style="text-align: right;"><b>[0 1 2 3 4]</b></p>	<p>AO3(a).2: candidate will produce evidence of the confident and safe use of the testing device and a report on their design and testing of the device including</p> <ul style="list-style-type: none"> <li>• an unaided plan and safety precautions</li> <li>• a description and diagram of their device</li> <li>• relevant results accurately recorded</li> <li>• some accurate processing with interpretation and conclusion</li> <li>• a logical evaluation;</li> </ul> <p>report will be clear and logical and will use basic scientific terminology correctly, with spelling, punctuation and grammar mainly used correctly;</p> <p style="text-align: right;"><b>[5 6 7]</b></p>	<p>AO3(a).3: candidate will produce evidence of independent safe work on their testing device and a report on their design and testing of the device, including</p> <ul style="list-style-type: none"> <li>• unaided plan and safety precautions</li> <li>• a description and diagram of their method, to include improvements from initial prototype</li> <li>• all results accurately recorded and made to the appropriate precision</li> <li>• accurate processing and interpretation of results with suitable conclusions</li> <li>• detailed evaluation;</li> </ul> <p>report is logical and well-structured and uses correct scientific terminology with correct use of spelling, punctuation and grammar throughout.</p> <p style="text-align: right;"><b>[8 9 10]</b></p>			
<p>AO3(b).1: Candidate will produce a report and evidence of simple tests that they have carried out safely on samples and control samples that have been</p> <ul style="list-style-type: none"> <li>• work-hardened</li> <li>• annealed</li> <li>• tempered;</li> </ul> <p style="text-align: right;"><b>[0 1 2]</b></p>	<p>AO3(b).2: candidate will produce a report and evidence on simple tests that they have carried out confidently and safely on samples and control samples that have been</p> <ul style="list-style-type: none"> <li>• work-hardened</li> <li>• annealed</li> <li>• tempered</li> </ul> <p>including a comparison of the treated and untreated samples;</p> <p style="text-align: right;"><b>[3 4]</b></p>	<p>AO3(b).3: candidate will produce a detailed report and evidence on simple tests that they have carried out independently and safely on samples and control samples that have been</p> <ul style="list-style-type: none"> <li>• work-hardened</li> <li>• annealed</li> <li>• tempered</li> </ul> <p>including an evaluation of whether the treatments have produced the expected result.</p> <p style="text-align: right;"><b>[5 6]</b></p>			

Criteria			Teacher Comments	Mark	Page No.
<p>AO3(c).1: Candidate will produce evidence of safe completion of the experiment and a report including safety precautions, from one experiment to measure either</p> <ul style="list-style-type: none"> <li>the electrical conductivity of a sample of resistance wire</li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>the specific heat capacity of a metal sample and specific heat capacity;</li> </ul> <p>to include results and calculations of the value of electrical conductivity or specific heat capacity;</p> <p style="text-align: right;"><b>[0 1 2 3 4]</b></p>	<p>AO3(c).2: candidate will produce evidence of safe and confident completion of the experiment and a report including safety precautions from each of one experiment to measure either</p> <ul style="list-style-type: none"> <li>the electrical conductivity of a sample of resistance wire</li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>the specific heat capacity of a metal sample and specific heat capacity;</li> </ul> <p>to include a full set of results and repeat readings and calculations of the value of electrical conductivity or specific heat capacity and estimate the uncertainty in their result;</p> <p style="text-align: right;"><b>[5 6 7]</b></p>	<p>AO3(c).3: candidate will produce evidence of independent and safe completion of the experiment and a report including safety precautions from each of one experiments to measure either</p> <ul style="list-style-type: none"> <li>the electrical conductivity of a sample of resistance wire</li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>the specific heat capacity of a metal sample and specific heat capacity;</li> </ul> <p>to include a full set of results and repeat readings and calculations of the value of electrical conductivity or specific heat capacity, estimations of the uncertainty in their result and evaluation of their results compared to data values.</p> <p style="text-align: right;"><b>[8 9 10]</b></p>			
<b>Total/50</b>					
If this work is a re-sit, please tick		Session and Year of previous submission	Jan / June	<b>2</b>	<b>0</b>
			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](http://www.ocr.org.uk)).  
A completed Centre Authentication form CCS160 **must** accompany the MS1 when it is sent to the moderator.

### Guidance on Completion of this Form

- One** sheet should be used for each candidate.
- Please ensure that the appropriate boxes at the top of the form are completed.
- 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.
- 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.
- Add the marks for the strands together to give a total out of 50. Enter this total in the relevant box.