

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	Process control systems	Unit Code	R116	Series		Year	
Centre Name					Centre Number		
Candidate Name					Candidate Number		

Marking Criteria – Total Marks for this unit is 60

Mark Band 1	Mark Band 2	Mark Band 3	Teacher Comment	Page
<p>LO1: Understand the application and operation of microcontrollers and microprocessors in engineered products</p>			<div style="border: 1px solid black; padding: 10px; width: 50px; margin: 0 auto;">Mark</div>	
<p>Demonstrates a basic understanding of simple layouts of microprocessor/microcontrollers in products or systems.</p> <p>Uses a limited range of examples to explain applications of microcontrollers and microprocessors.</p> <p>Outlines the basic operation of microprocessor/microcontroller control in a product or system.</p> <p>Describes the basic function of a limited range of input, control and output devices used in microprocessor/microcontrollers.</p> <p style="text-align: right;">1 – 6 marks</p>	<p>Demonstrates a detailed understanding of simple microprocessor/microcontrollers layouts in products or systems.</p> <p>Uses a range of examples to explain applications of microcontrollers and microprocessors.</p> <p>Describes the operation of microprocessor/microcontroller control in a product or system in some detail.</p> <p>Describes the basic function of a range of input, control and output devices used in microprocessor/microcontrollers.</p> <p style="text-align: right;">7 – 12 marks</p>	<p>Demonstrates a comprehensive understanding of simple layouts of microprocessor/microcontrollers in products or systems.</p> <p>Uses a wide range of examples to explain applications of microcontrollers and microprocessors.</p> <p>Comprehensively describes the operation of microprocessor/microcontroller control in a product or system.</p> <p>Describes the basic function of a wide range of input, control and output devices used in microprocessor/microcontrollers.</p> <p style="text-align: right;">13 – 18 marks</p>		

LO2: Be able to design, develop and simulate a control system			Teacher Comment	Page
<p>Produces a limited solution for a control system problem.</p> <p>Requires regular assistance to design a solution to a control system problem. Uses some resources to select input and output sensors and devices, not all of which may be appropriate.</p> <p>Draws upon limited skills/knowledge /understanding from other units in the specification.</p> <p style="text-align: right;">1 – 4 marks</p>	<p>Produces a detailed solution for a control system problem.</p> <p>Requires occasional assistance to design a solution to a control system problem. Uses a range of resources to select some appropriate input and output sensors and devices.</p> <p>Draws upon some relevant skills/knowledge/understanding from other units in the specification.</p> <p style="text-align: right;">5 – 8 marks</p>	<p>Produces a detailed and comprehensive solution for a control system problem.</p> <p>Works independently to design a solution to a control system problem. Uses a range of resources to select appropriate input and output sensors and devices.</p> <p>Clearly draws upon relevant skills/knowledge/understanding from other units in the specification.</p> <p style="text-align: right;">9 – 12 marks.</p>	<div style="border: 1px solid black; width: 50px; height: 50px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> Mark </div>	
<p>Requires regular assistance to use a programming tool to create a control system programme to solve some basic aspects of a control system problem.</p> <p>Undertakes limited simulation of the control system programme. Requires regular assistance to carry out modifications to the design of the programme.</p> <p>Requires regular assistance to download the control programme to a programmable device.</p> <p style="text-align: right;">1 – 6 marks</p>	<p>Requires occasional assistance to use a programming tool to create a control system programme to solve most aspects of a control system problem.</p> <p>Undertakes detailed simulation of the control system programme. Requires occasional assistance to carry out modifications to the design of the programme.</p> <p>Requires occasional assistance to download the control programme to a programmable device.</p> <p style="text-align: right;">7 – 12 marks</p>	<p>Works independently using a programming tool to create a control system programme to successfully solve a control system problem.</p> <p>Undertakes comprehensive simulation of the control system programme. Independently carries out modifications to the design of the programme.</p> <p>Works independently to download the control programme to a programmable device.</p> <p style="text-align: right;">13 – 18 marks</p>	<div style="border: 1px solid black; width: 50px; height: 50px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> Mark </div>	

LO3: Be able to test control systems			Teacher Comment	Page
<p>Devises a basic test plan to ensure functionality of the control system.</p> <p>Undertakes limited testing of the control systems using the test plan to evaluate some aspects of the performance of the system.</p> <p>Refine some of the control systems based upon the outcome of testing. Refines have limited effectiveness.</p> <p style="text-align: right;">1 – 4 marks</p>	<p>Devises a detailed test plan to ensure functionality of the control system.</p> <p>Undertakes detailed testing of the control systems using the test plan to evaluate most aspects of the performance of the system.</p> <p>Refines most of the control systems based upon the outcome of testing. Refines are mostly effectively</p> <p style="text-align: right;">5 – 8 marks</p>	<p>Devises a comprehensive test plan to ensure functionality of the control system.</p> <p>Undertakes comprehensive testing of the control systems using the test plan to evaluate all aspects of the performance of the system.</p> <p>Effectively refines the control systems based upon the outcome of testing.</p> <p style="text-align: right;">9 – 12 marks</p>	<div style="border: 1px solid black; width: 60px; height: 60px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> Mark </div>	
			Total/60	
If this work is a re-sit, please tick		Session and Year of previous submission		Please tick to indicate this work has been standardised internally

Guidance on Completion of this Form

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 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.