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| **OCR Level 1/Level 2 Cambridge National in Engineering Design** |
| Qualification J822  Unit R040 |
| Unit Recording Sheet |

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| Please read the instructions printed at the end of this form. A Unit Recording Sheet must be completed for each candidate and unit. | | | | | | | | | | |
| Unit Title | | Design, evaluation and modelling | | | | Unit Code | R040 | Session | | Choose an item. | Year | 2 | | 0 |  | |  |
| Scenario Title | | |  | | | | | | | | | | | | | | |
| Centre Name | | |  | | | | | | | Centre Number | |  | | | | | |
| Candidate Name | | |  | | | | | | | Candidate Number | |  | | | | | |
| Marking Criteria | | | | | | | | Teacher Comments | | | | Mark | | | Page No. | | |
| **Task 1 – Topic Area 1.1: Product Evaluation – Product Analysis** | | | | | | | |  | | | |  | | |  | | |
| **MB1: 1 - 3 marks** | | | **MB2: 4 - 6 marks** | **MB3: 7- 9 marks** | | | |
| Produces a **basic** product analysis of the key features of products using ACCESS FM.  Provides a **basic** description of the strengths and weaknesses of existing products.  **Basic** use of an engineering matrix.  **[1 2 3]** | | | Produces an **adequate** product analysis of the key features of products using ACCESS FM.  Provides an **adequate** description of the strengths and weaknesses of existing products.  **Appropriate** use of an engineering matrix.  **[4 5 6]** | Produces a **comprehensive** product analysis of the key features of products using ACCESS FM.  Provides a **comprehensive** description of the strengths and weaknesses of existing products.  **Effective** use of an engineering matrix.  **[7 8 9]** | | | |
| **/9** | | |

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| **Task 2 – Topic Area 1.2: Product Evaluation – Product Disassembly** | | |  |  |  |
| **MB1: 1 - 3 marks** | **MB2: 4 - 6 marks** | **MB3: 7- 9 marks** |
| Explanation shows **a limited** understanding of potential hazards and safety considerations when using tools and equipment.  Produces a **limited** analysis of the components, materials, production methods, assembly, and manufacturing methods used in an engineered product.  **[1 2 3]** | Explanation shows and **adequate** understanding of potential hazards and safety considerations when using tools and equipment.  Produces an **adequate** analysis of the components, materials, production methods, assembly, and manufacturing methods used in an engineered product.  **[4 5 6]** | Explanation shows a **clear** understanding of potential hazards and safety considerations when using tools and equipment.  Produces a **comprehensive** analysis of the components, materials, production methods, assembly, and manufacturing methods used in an engineered product.  **[7 8 9]** |
| **/9** |

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| **Task 3 – Topic Area 2: Virtual CAD 3D** | | |  |  | |  |
| **MB1: 1 - 4 marks** | **MB2: 5 - 8 marks** | **MB3: 9- 12 marks** |
| Produces a **basic** 3D virtual model using CAD.  Produces a **simple** 3D virtual model consisting of a very limited number of components.  Demonstration of complex industry-related CAD activities is **dependent** upon assistance or help from other sources.  **[1 2 3 4]** | Produces an **adequate** 3D virtual model using CAD.  Produces an **adequate** 3D virtual model consisting of some mated components.  Demonstration of complex industry-related CAD activities is carried out with **some** assistance or help from other sources.  **[5 6 7 8]** | Produces a **comprehensive** 3D virtual model using CAD.  Produces a **complex** 3D virtual model consisting of many mated components.  Demonstration of complex industry-related CAD activities is carried out **independently**.  **[9 10 11 12]** |
| **/12** | |

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| **Task 4 – Topic Area 2: Physical Modelling – Production Planning** | | |  |  |  |
| **MB1: 1 - 2 marks** | **MB2: 3 - 4 marks** | **MB3: 5- 6 marks** |
| A **basic** description of the planning stages to be used in the manufacturing of the prototype.  Shows **limited** understanding of safety considerations.  **[1 2]** | An **adequate** description of the planning stages to be used in the manufacturing of the prototype.  Shows **some** understanding of safety considerations.  **[3 4]** | A **comprehensive** description of the planning stages to be used in the manufacturing of the prototype.  Shows a **detailed** understanding of safety considerations.  **[5 6]** |
| **/6** |

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| **Task 5 – Topic Area 2: Physical Modelling – Prototype Production** | | |  |  |  |
| **MB1: 1 - 6 marks** | **MB2: 7 - 12 marks** | **MB3: 13- 18 marks** |
| **Dependent** upon prompts to use PPE equipment when working with tools, machines, materials, chemicals, finishes and solvents.  Use tools and processes with **limited** effectiveness to produce and assemble an outcome that partly meets the production plan. The prototype will be incomplete.  Produces a **limited** record of the key stages of making the prototype.  **[1 2 3 4 5 6]** | Requires **some** prompting to use appropriate PPE when working with tools, machines, materials, chemicals, finishes and solvents.  Use tools and processes with **some** effectiveness to produce and assemble an outcome that mostly meets the production plan. The prototype will be mostly complete.  Produces an **adequate** record of most of the key stages of making the prototype.  **[7 8 9 10 11 12]** | **Independently** uses appropriate PPE when working with tools, machines, materials, chemicals, finishes and solvents.  Use tools and processes **effectively** to produce and assemble an outcome that is of a high quality, accurate and fully meets the production plan. The prototype will be fully complete.  Produces a **detailed** and accurate record of the key stages of making the prototype.  **[13 14 15 16 17 18]** |
| **/18** |

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| **Task 6 – Topic Area 2: Physical Modelling – Evaluation of a prototype** | | |  |  |  |
| **MB1: 1 - 2 marks** | **MB2: 3 - 4 marks** | **MB3: 5- 6 marks** |
| Produces a **basic** evaluation of the prototype outcome against the product specification.  Provides **limited** potential improvements. No justification is provided.  **[1 2]** | Produces an **adequate** evaluation of the prototype outcome against the product specification.  Provides **some** potential improvements, with justification.  **[3 4]** | Produces a **comprehensive** evaluation of the prototype outcome against the product specification.  Provides **detailed** potential improvements with justification.  **[5 6]** |
| **/6** |
| **Total** | | | | /**60** |  |

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| Please tick to confirm 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 Centre Authentication form (CCS160) **must** be completed for each submission to the moderator. This **must** be held in your centre to be available on request at centre inspection.

Guidance on Completion of this Form

1 One form should be used for every candidate.

2 Please make sure that all parts 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/highlight the mark awarded for each strand of the marking criteria in the appropriate box.

5 Enter the circled/highlighted mark in the 'Mark' column.

6 Add the marks for the strands together to give a total out of 60. Enter this total in the relevant box.

7 For Paper-based submissions, one of these sheets, suitably completed, should be attached to the assessed work of each candidate.

8 For Electronic Internal submissions, prior to submitting ‘candidate evidence’ to OCR (via the Repository/SfA or via a USB), the Centre should add a separate folder containing the Unit Recording Sheets.