

Assessment Objective 4

Product Development

Candidates will need to:

- as a result of investigation, testing or trialling, make reasoned decisions about materials; production methods; standard components.
- consider how materials are prepared for manufacture and how standard components are used;
- by modelling, apply test procedures ensuring the product meets the original design brief and its fitness for purpose;
- consider when developing the product, the implications for quantity of: materials and components; critical dimensions and tolerances.
- develop a control system for the manufacture of their product;
- be flexible and adaptable in responding to changing circumstances and new opportunities;
- make any necessary modifications to the chosen design;
- give details of the final design including a final product specification;
- present design solutions using a range of graphic techniques and ICT including CAD, to develop, model and communicate design proposals.

Level of response	Mark range	ACTUAL
- Some materials and production methods identified.	1	
- As a result of investigations some decisions made about materials, production methods function and pre-manufactured items.	2	
- Some testing and trialling resulting in decisions about materials, production methods and pre-manufactured items.	3	
- Appropriate testing and trialling resulting in reasoned decisions about materials, production methods and pre-manufactured items.	4	
- Has attempted to model part of final solution.	1	
- Has used modelling to check that the product meets the design brief.	2	
- Used modelling and testing to ensure that the product meets the design brief.	3	
- Has used modelling and test procedures to identify any necessary modifications and to ensure the product meets the design brief.	4	
- Limited details given for final solution.	1	
- Some important details given about the final product and how more than one of the product could be made.	2	
- Most details given about final product and the control system needed to produce the product in quantity.	3	
- Full details about the final product and the control system needed to produce the product in quantity.	4	

TOTAL

Assessment Objective 5

Product Planning and Realisation

Candidates will need to:

- produce a plan of action which considers: materials, manufactured items, equipment, processes and health and safety and the need to make products that match the design specification;
- select and use tools, equipment and processes effectively and safely;
- economically prepare materials/ manufactured items for production, allowing for waste and fine finish;
- complete a quality outcome suitable for the intended user or users, ensure that their outcome functions effectively;
- be prepared to adapt working;
- use a range of skills and techniques appropriate to the task;
- where appropriate apply a range of industrial techniques when working with familiar materials and processes.

Level of response	Mark range	ACTUAL
- Little or no planning.	0 - 3	
- Planning will have been restricted to the immediate task and will have relied on prompting.	4 - 6	
- Most of the realisation will have been planned in advance	7 - 9	
- The realisation will have been thoroughly planned to specify an effective order for the sequence of operations.	10 - 12	
- Has used a limited range of materials, tools and equipment	0 - 3	
- Has overcome problems as they arise using appropriate materials, tools and equipment	4 - 6	
- Has made economic and efficient use of materials, tools & equipment modifying the application of these if appropriate.	7 - 9	
- Are resourceful and adaptable with materials, tools and equipment and to a high degree of precision.	10 - 12	
- With frequent prompting uses basic skills and techniques appropriate to the task. Little understanding of safe working.	0 - 3	
- With some guidance has used a range of skills and techniques appropriate to task. Reasonable understanding of safe working procedures.	4 - 6	
- With a normal level of supervision, combines a range of skills and techniques appropriate to task. Good understanding of safe working procedures.	7 - 9	
- Has independently combined a range of skills and techniques appropriate to the task. High understanding of safe working procedures.	10 - 12	
- The product will exhibit a low standard of outcome and may not be successfully completed.	0 - 4	
- The product will exhibit a reasonable standard of outcome, be mainly complete and will satisfy the specification with a limited degree of success.	5 - 8	
- The product will exhibit a good standard of outcome, will be complete and will function as intended.	9 - 12	
- The product will be completed to a high quality and will fully meet the requirements of the final product specification.	13 - 16	

TOTAL

Assessment Objective 6

Evaluation and Testing

Candidates will need to:

- evaluate their products to ensure that they are of a suitable quality for intended users;
- carry out testing, resulting in reasoned conclusions that suggest any necessary modifications to improve the product;
- review whether they have used resources appropriately e.g. time, materials, equipment, and production methods;
- analyse the performance of their manufacturing control system in the production of the prototype.

Level of response	Mark range	ACTUAL
- Relevant unsupported comment with some reference to the specification.	1	
- Some supported comment with reference to the specification and use of resources.	2	
- Relevant comments with reference to the specification and use of resources.	3	
- Critical evaluation related to the specification and use of resources.	4	
- No evidence of testing.	1	
- Superficial testing with a conclusion.	2	
- Relevant testing with few conclusions, leading to a possible modification or improvement of product and/or system designed to control manufacture.	3	
- Detailed testing with meaningful conclusions leading to proposals for further development, modification or improvements of product and system designed to control manufacture.	4	

TOTAL