



National
Qualifications

X819/77/11

Design and Manufacture

Marking Instructions

Please note that these marking instructions have not been standardised based on candidate responses. You may therefore need to agree within your centre how to consistently mark an item if a candidate response is not covered by the marking instructions.

General marking principles for Advanced Higher Design and Manufacture

Always apply these general principles. Use them in conjunction with the detailed marking instructions, which identify the key features required in candidates' responses.

- (a) Always use positive marking. This means candidates accumulate marks for the demonstration of relevant skills, knowledge and understanding; marks are not deducted for errors or omissions.
- (b) If a candidate response does not seem to be covered by either the principles or detailed marking instructions, and you are uncertain how to assess it, you must seek guidance from your team leader.
- (c) Where a question asks a candidate to **describe**, they must provide a statement or structure of characteristics and/or features. This should be more than an outline or a list. It may refer to, for example, a concept, process, experiment, situation, or facts, in the context of and appropriate to the question.
- (d) Where a question asks candidates to **explain**, they must relate cause and effect and/or make relationships between things clear, in the context of the question or a specific area within the question.

Marking instructions for each question

Section 1 - Note that candidates are only required to answer ONE question from this section. The first question which the candidate answers should be marked.

Question		Expected response	Max mark	Additional guidance
1.	(a)	<p>The candidate is expected to discuss the effectiveness of the aesthetics of the product(s) they analysed.</p> <p>Although there is an underlying body of knowledge required to answer the question, there is a wide range of possible answers. The question is therefore marked holistically. The features which are looked for are knowledge of the subject matter, ability to comprehend the question and to construct an answer which uses clear examples to support the points made.</p> <p>Typical answers are likely to refer to some of the following</p> <ul style="list-style-type: none"> • a product(s) • a viewpoint on the aesthetics of the product(s) • reasons that the aesthetics are/are not effective • aesthetic terms such as colour, shape, form, texture, etc • comparisons to the aesthetics of similar products. 	4	<p>Candidates may refer to more than one product in their answer.</p> <p>Note that the answer must refer to product(s); general comments about aesthetics will not address the question and should be awarded 0 marks.</p> <p>Award marks using the best fit characteristics shown below.</p>

An answer which falls into these categories may do so for a number of reasons. It is likely that		
0 – 1	2 – 3	4
<p>Candidate demonstrates a limited knowledge and understanding of the subject matter.</p> <ul style="list-style-type: none"> • vague conclusions have been drawn on the effectiveness of aesthetics of the product(s) • it demonstrates a limited knowledge and understanding of the subject matter • little reference is made to their analysis • general reference is made to product(s) • generic references are made to aesthetics • little reference is made to aspects and features that influence the effectiveness of the aesthetics of the product(s) • few valid points are made • it does not address the question – in this case 0 marks should be awarded. 	<p>Candidate demonstrates knowledge of the subject matter and an understanding of the main aspects.</p> <ul style="list-style-type: none"> • conclusions have been drawn on the effectiveness of aesthetics of the product(s) • it demonstrates knowledge of the subject matter • reference is made to their analysis • reference is made to product(s) • reference is made to aesthetics • reference is made to aspects and features that influence the effectiveness of the aesthetics of the product(s) • a number of valid points are made • it generally addresses the question. 	<p>Candidate demonstrates sound knowledge of the subject matter and a secure understanding of the main aspects.</p> <ul style="list-style-type: none"> • clear conclusions have been drawn on the effectiveness of aesthetics of the product(s) • it demonstrates sound knowledge of the subject matter • reference is made to their analysis • clear stance taken on effectiveness of aesthetics • clear references are made to product(s) • clear references are made to aesthetics • clear reference is made to aspects and features that influence the effectiveness of the aesthetics of the product(s) • a good number of valid points are made • it clearly addresses the question.

Question		Expected response	Max mark	Additional guidance
	(b)	<p>The candidate is expected to discuss the suitability of the materials and processes used to manufacture the product(s) they analysed.</p> <p>Although there is an underlying body of knowledge required to answer the question, there is a wide range of possible answers. The question is therefore marked holistically. The features which are looked for are knowledge of the subject matter, ability to comprehend the question and to construct an answer which uses clear examples to support the points made.</p> <p>Typical answers are likely to refer to some of the following</p> <ul style="list-style-type: none"> • a product(s) • product features (complexity, form, aesthetics, ergonomics, assembly) • performance requirements of product or component parts • materials and processes • conditions of use • scale of production • expected life span • cost effectiveness. 	4	<p>Candidates may refer to more than one product in their answer.</p> <p>Note that the answer must refer to the product(s); general comments about materials and processes will not address the question and should be awarded 0 marks.</p> <p>Award marks using the best fit characteristics shown below.</p>

An answer which falls into these categories may do so for a number of reasons. It is likely that		
0 – 1	2 – 3	4
<p>Candidate demonstrates a limited knowledge and understanding of the subject matter.</p> <ul style="list-style-type: none"> • vague conclusions have been drawn on the suitability of materials and processes • it demonstrates a limited knowledge and understanding of the subject matter • little reference is made to their analysis • limited reference is made to product(s) • few valid points are made • it does not address the question – in this case 0 marks should be awarded. 	<p>Candidate demonstrates knowledge of the subject matter and an understanding of the main aspects.</p> <ul style="list-style-type: none"> • conclusions have been drawn on the suitability of materials and processes • it demonstrates knowledge of the subject matter • reference is made to their analysis • reference made to product(s) • a number of valid points are made • it generally addresses the question. 	<p>Candidate demonstrates sound knowledge of the subject matter and a secure understanding of the main aspects.</p> <ul style="list-style-type: none"> • clear conclusions have been drawn on the suitability of materials and processes • it demonstrates sound knowledge of the subject matter • clear reference is made to their analysis • clear reference is made to product(s) • a good number of valid points are made • it clearly addresses the question.

Question		Expected response	Max mark	Additional guidance
	(c)	<p>The candidate is expected to discuss the suitability of the assembly methods used to manufacture the product(s) they analysed.</p> <p>Although there is an underlying body of knowledge required to answer it, there is a wide range of possible answers. The question is therefore marked holistically. The features which are looked for are knowledge of the subject matter, ability to comprehend the question and to construct an answer which uses clear examples to support the points made.</p> <p>Typical answers are likely to refer to some of the following</p> <ul style="list-style-type: none"> • a product(s) • performance required from product or component parts • manufacturing processes • conditions of use • expected life span • environment • cost effectiveness • maintenance requirements • features and number of components. 	4	<p>Candidates may refer to more than one product in their answer.</p> <p>Note that the answer must refer to the product(s); general comments about assembly methods will not address the question and should be awarded 0 marks.</p> <p>Award marks using the best fit characteristics shown below.</p>

An answer which falls into these categories may do so for a number of reasons. It is likely that		
0 – 1	2 – 3	4
<p>Candidate demonstrates a limited knowledge and understanding of the subject matter.</p> <ul style="list-style-type: none"> vague conclusions have been drawn on the suitability of assembly methods. it demonstrates a limited knowledge and understanding of the subject matter. little reference is made to their analysis. limited reference is made to product(s). few valid points are made. it does not address the question – in this case 0 marks should be awarded. 	<p>Candidate demonstrates knowledge of the subject matter and an understanding of the main aspects.</p> <ul style="list-style-type: none"> conclusions have been drawn on the suitability of assembly methods. it demonstrates knowledge of the subject matter. reference is made to their analysis. reference is made to product(s). a number of valid points are made. it generally addresses the question. 	<p>Candidate demonstrates sound knowledge of the subject matter and a secure understanding of the main aspects.</p> <ul style="list-style-type: none"> clear conclusions have been drawn on the suitability of the assembly methods. it demonstrates sound knowledge of the subject matter clear reference is made to their analysis. clear reference is made to product(s). a good number of valid points are made. it clearly addresses the question.

Question	Expected response	Max mark	Additional guidance
(d)	<p>The candidate is expected to discuss whether consideration for the environment influenced the design of product(s) they analysed.</p> <p>Although there is an underlying body of knowledge required to answer it, there is a wide range of possible answers. The question is therefore marked holistically. The features which are looked for are knowledge of the subject matter, ability to comprehend the question and to construct an answer which uses clear examples to support the points made.</p> <p>Typical answers are likely to refer to</p> <ul style="list-style-type: none"> • impact of materials; type and quantity • number of parts • ease of disassembly • ease of maintenance • expected life span • location of manufacture • packaging. 	3	<p>Candidates may refer to more than one product in their answer.</p> <p>Note that the answer must refer to the product(s); general comments about assembly methods will not address the question and should be awarded 0 marks.</p> <p>Award marks using the best fit characteristics shown below.</p>

An answer which falls into these categories may do so for a number of reasons. It is likely that		
0 – 1	2	3
<p>Candidate demonstrates a limited knowledge and understanding of the subject matter.</p> <ul style="list-style-type: none"> vague conclusions have been drawn on the suitability of assembly methods it demonstrates a limited knowledge and understanding of the subject matter little reference is made to their analysis limited reference is made to product(s) few valid points are made it does not address the question – in this case 0 marks should be awarded. 	<p>Candidate demonstrates knowledge of the subject matter and an understanding of the main aspects.</p> <ul style="list-style-type: none"> conclusions have been drawn on the suitability of assembly methods it demonstrates knowledge of the subject matter reference is made to their analysis reference is made to product(s) a number of valid points are made it generally addresses the question. 	<p>Candidate demonstrates sound knowledge of the subject matter and a secure understanding of the main aspects.</p> <ul style="list-style-type: none"> clear conclusions have been drawn on the suitability of the assembly methods it demonstrates sound knowledge of the subject matter clear reference is made to their analysis clear reference is made to product(s) a good number of valid points are made it clearly addresses the question.

Question		Expected response	Max mark	Additional guidance
2.	(a)	<p>Candidates are expected to describe how the evolution of the product(s) was influenced by advances in materials and manufacturing processes they studied during the course.</p> <p>Although there is an underlying body of design knowledge required to answer it, there is a wide range of possible answers. The question is therefore marked holistically. The features which are looked for are knowledge of the subject matter, ability to comprehend the question and to construct an answer which uses clear examples to support the points made.</p> <p>Typical answers are likely to refer to some of the following</p> <ul style="list-style-type: none"> • notable turning points • significant changes in materials and manufacturing processes • significant changes to a product(s) <ul style="list-style-type: none"> – improvements to function – changes to aesthetics – improved ergonomics – increased availability – improved performance – safety – affordability – availability • influential products. 	6	<p>Candidates may refer to the influence of advances in materials and manufacturing processes on the evolution of more than one product in their answer.</p> <p>Note that the answer must refer to the product(s); general comments about advances in materials and manufacturing processes will not address the question and should be awarded 0 marks.</p> <p>Award marks using the best fit characteristics shown below.</p>

An answer which falls into these categories may do so for a number of reasons. It is likely that		
0 – 2	3 – 4	5 – 6
<p>Candidate demonstrates a limited knowledge and understanding of the subject matter.</p> <ul style="list-style-type: none"> • there is a limited description of the evolution of the product(s) due to advances in materials and manufacturing processes • it demonstrates a limited knowledge and understanding of the subject matter • there is little reference to their research. • general reference is made to product(s) • few valid points are made • it does not address the question – in this case 0 marks should be awarded. 	<p>Candidate demonstrates knowledge of the subject matter and an understanding of the main aspects.</p> <ul style="list-style-type: none"> • there is a description of the evolution of the product(s) due to advances in materials and manufacturing processes • it demonstrates knowledge and understanding of the subject matter • there is reference to their research • reference is made to product(s) • a number of valid points are made • it generally addresses the question. 	<p>Candidate demonstrates sound knowledge of the subject matter and a secure understanding of the main aspects.</p> <ul style="list-style-type: none"> • there is a clear description of the evolution of the product(s) due to advances in materials and manufacturing processes • it demonstrates sound knowledge and understanding of the subject matter • there is clear reference to their research • clear reference is made to product(s) • a good number of valid points are made • it clearly addresses the question.

Question	Expected response	Max mark	Additional guidance
(b)	<p>Candidates are expected to describe how the evolution of the product(s) was influenced by two of the following</p> <ul style="list-style-type: none"> • safety • global events • a designer • legislation. <p>Although there is an underlying body of design knowledge required to answer it, there is a wide range of possible answers. The question is therefore, marked holistically. The features which are looked for are knowledge of the subject matter, ability to comprehend the question and to construct an answer which uses clear examples to support the points made.</p> <p>Typical answers are likely to refer to changes to some of the following</p> <ul style="list-style-type: none"> • aesthetics • function • performance • safety • economics • ergonomics • market • materials • manufacturing processes • assembly methods • production systems. 	6	<p>Candidates may refer to the influence on the evolution of more than one product in their answer.</p> <p>Note that the answer must refer to the product(s); general comments on safety, global events, a designer, or legislation will not address the question and should be awarded 0 marks.</p> <p>Note that candidates are only allowed to describe the influence of TWO of the aspects. If they refer to more than two, marks should be awarded for the first two aspects mentioned in their answer.</p> <p>Award marks using the best fit characteristics shown below.</p>

An answer which falls into these categories may do so for a number of reasons. It is likely that		
0 – 2	3 – 4	5 – 6
<p>Candidate demonstrates a limited knowledge and understanding of the subject matter.</p> <ul style="list-style-type: none"> • there is a limited description in evolution of the product(s) due to TWO of the aspects • it demonstrates a limited knowledge and understanding of the subject matter • there is little reference to their research • general reference is made to product(s) • few valid points are made • it does not address the question – in this case 0 marks should be awarded. 	<p>Candidate demonstrates knowledge of the subject matter and an understanding of the main aspects.</p> <ul style="list-style-type: none"> • there is a description in evolution of the product(s) due to TWO of the aspects • it demonstrates knowledge and understanding of the subject matter • there is reference to their research • reference is made to product(s) • a number of valid points are made • it generally addresses the question. 	<p>Candidate demonstrates sound knowledge of the subject matter and a secure understanding of the main aspects.</p> <ul style="list-style-type: none"> • there is a clear description in evolution of the product(s) due to TWO of the aspects • it demonstrates sound knowledge and understanding of the subject matter • there is clear reference to their research • clear reference is made to product(s) • a good number of valid points are made • it clearly addresses the question.

Question	Expected response	Max mark	Additional guidance
(c)	<p>Candidates are expected to describe and give reasons for possible future developments in the product(s) they have studied.</p> <p>Although there is an underlying body of design knowledge required to answer it, there is a wide range of possible answers. The question is therefore marked holistically. The features which are looked for are knowledge of the subject matter, ability to comprehend the question and to construct an answer which uses clear examples to support the points made.</p> <p>Typical answers are likely to include future developments such as</p> <ul style="list-style-type: none"> • functional, aesthetic and ergonomic improvements • improvements to performance, safety, maintenance, and durability • changes in economics • environmental impact and sustainability <p>and reasons such as</p> <ul style="list-style-type: none"> • advances in materials, manufacturing, and technology • artificial intelligence • communication between products • advances in computing • changes in society and attitudes. 	3	<p>Candidates may refer to more than one product in their answer.</p> <p>Note that the answer must refer to the product(s); general comments about future developments will not address the question and should be awarded 0 marks.</p> <p>Award marks using the best fit characteristics shown below.</p>

An answer which falls into these categories may do so for a number of reasons. It is likely that		
0 – 1	2	3
<p>Candidate demonstrates a limited knowledge and understanding of the subject matter.</p> <ul style="list-style-type: none"> • there is a limited description of the possible future developments in products(s) and reasons for them • it demonstrates a limited knowledge and understanding of the subject matter • there is little reference to their research • general reference is made to product(s) • few valid points are made • it does not address the question – in this case 0 marks should be awarded. 	<p>Candidate demonstrates knowledge of the subject matter and an understanding of the main aspects.</p> <ul style="list-style-type: none"> • there is a description of the possible future developments in products(s) and reasons for them • it demonstrates knowledge and understanding of the subject matter • there is reference to their research • reference is made to product(s) • a number of valid points are made • it generally addresses the question. 	<p>Candidate demonstrates sound knowledge of the subject matter and a secure understanding of the main aspects.</p> <ul style="list-style-type: none"> • there is a clear description of the possible future developments in products(s) and reasons for them • it demonstrates sound knowledge and understanding of the subject matter • there is clear reference to their research • clear reference is made to product(s) • a good number of valid points are made • it clearly addresses the question.

Section 2

Question		Expected response	Max mark	Additional guidance
3.	(a)	<p>Candidates are expected to describe the issues a manufacturer would consider when selecting suitable processes and materials for products such as the bikes.</p> <p>Answers are likely to refer to some of the following</p> <ul style="list-style-type: none"> • required properties of the components • overall product aesthetics • ergonomic issues • number being manufactured • complexity of component • environmental and societal issues. 	6	<p>1 mark for each valid description outlining the issues.</p> <p>Candidates must refer to processes and materials. Award a maximum of 4 marks to be awarded for valid descriptions if only one is referred to.</p> <p>Any number of components may be referenced.</p> <p>Candidates may refer to products other than the bikes.</p>

Question	Expected response	Max mark	Additional guidance
(b)	<p>Candidates are expected to identify ways in which a manufacturer could improve the efficiency of manufacturing products, such as the bikes, and explain their benefits.</p> <p>Typical answers are likely to refer to some of the following</p> <ul style="list-style-type: none"> • automation • CAD/CAM • CNC machining • standard components • standardisation (global) • JIT production • flexible manufacturing systems • sub-contracting • use of jigs • use of Gantt and flow charts <p>and reasons such as</p> <ul style="list-style-type: none"> • improved volume of production • improved quality of product • better use of machines • reduced costs • less waste. 	5	<p>1 mark for each valid point identifying a way to improve efficiency and explaining the benefit. If an extended answer is given which explains more than one benefit for one way to improve efficiency, a maximum of 2 marks may be awarded.</p> <p>Candidates must explain the benefit(s) of ways to improve efficiency. 0 marks should be awarded for simply identifying ways to increase efficiency.</p> <p>Candidates may refer to products other than the bikes.</p>

Question		Expected response	Max mark	Additional guidance
	(c)	<p>Candidates will be expected to explain what influences the placement of the injector and ejector points in moulds.</p> <p>Typical answers are likely to refer to</p> <ul style="list-style-type: none"> • complexity of component • surface finish (concealing marks) • volume of material • size of component. 	2	1 mark for each valid point explaining what influences the placement of the injector and ejector in moulds.

Question		Expected response	Max mark	Additional guidance
4.	(a)	<p>Candidates will be expected to explain why launching a new product can be a risk.</p> <p>Typical answers are likely to refer to</p> <ul style="list-style-type: none"> • poor product placement • product too radical/unfamiliar • cost • unknown brand • lack of established market • negative press • high development/marketing costs. 	4	1 mark for each valid point explaining why launching a new product can be a risk.

Question		Expected response	Max mark	Additional guidance
	(b)	<p>Candidates are expected to identify a suitable method that could protect the IPR of the steam iron and outline its key features.</p> <p>Typical answers are likely to include descriptions of one the following</p> <ul style="list-style-type: none"> • design rights • patents • trademark. 	3	<p>1 mark for each valid feature of the method identified. Features may include type of property covered, length of cover and cost of cover.</p> <p>Marks should only be awarded for description of one method.</p> <p>Copyright is not a suitable method of protection for this product and any of it description should not be awarded marks.</p>
	(c)	<p>Candidates are expected to describe the steps a company could take to minimise the negative impact of a product recall.</p> <p>Typical answers are likely to include</p> <ul style="list-style-type: none"> • all stakeholders should be informed of recall before it happens • all customers should be notified and informed of action to be taken • a team should be set up to deal with recall • suspend production • QA procedures updated. 	3	<p>1 mark for each valid description of a step a company could take to minimise the negative impact of a product recall.</p> <p>Marks should not be awarded for methods of preventing a product recall.</p>

Question		Expected response	Max mark	Additional guidance
	(d)	<p>Candidates are expected to describe the steps a manufacturer could take to ensure a high level of quality assurance.</p> <p>Typical answers are likely to refer to</p> <ul style="list-style-type: none"> • sampling of raw materials • random sampling of products as they travel through the manufacturing process • ensure the work force is highly trained • use jigs, fixtures and templates to reduce the possibility of human error • use of technology prior to manufacture to calculate where errors may occur. 	4	1 mark for each valid description of the steps a company could take to ensure a high level of quality assurance.

Question		Expected response	Max mark	Additional guidance
5.	(a)	<p>Candidates will be expected to describe a possible research strategy that may have been carried out to draw up a specification for the Boomer. Their answer should include methods of gathering information and who would be consulted.</p> <p>Although there is an underlying body of design knowledge required to answer it, there is a wide range of possible answers. The question is therefore marked holistically. The features which are looked for are knowledge of the subject matter, ability to comprehend the question and to construct an answer which uses clear examples to support the points made.</p> <p>Typical methods of gathering information are likely to include</p> <ul style="list-style-type: none"> • user trip • user trial • questionnaires • surveys <p>and people consulted</p> <ul style="list-style-type: none"> • elderly people • relations of elderly people • care professionals • ergonomists • material specialists. 	6	Award marks using the best fit characteristics shown below.

An answer which falls into these categories may do so for a number of reasons. It is likely that		
0 – 2	3 – 4	5 – 6
<p>Candidate demonstrates a limited knowledge and understanding of the subject matter.</p> <ul style="list-style-type: none"> • there is a limited description of a possible research strategy • there is limited reference to the Boomer • it demonstrates a limited knowledge and understanding of the subject matter • there is limited reference to methods of gathering information • there is limited reference to who would be consulted • few valid points are made • it does not address the question – in this case 0 marks should be awarded. 	<p>Candidate demonstrates knowledge of the subject matter and an understanding of the main aspects.</p> <ul style="list-style-type: none"> • there is a description of a possible research strategy • there is reference to the Boomer • it demonstrates a knowledge and understanding of the subject matter • there is reference to methods of gathering information • there is reference to who would be consulted • a number of valid points are made • it generally addresses the question. 	<p>Candidate demonstrates sound knowledge of the subject matter and a secure understanding of the main aspects.</p> <ul style="list-style-type: none"> • there is a limited description of a possible research strategy • there is clear reference to the Boomer • it demonstrates a clear knowledge and understanding of the subject matter • there is clear reference to methods of gathering information • there is clear reference to who would be consulted • a good number valid points are made • it clearly addresses the question.

Question	Expected response	Max mark	Additional guidance
(b)	<p>Candidates will be expected to describe how modelling could have been used to develop the Boomer.</p> <p>Although there is an underlying body of design knowledge required to answer it, there is a wide range of possible answers. The question is therefore marked holistically. The features which are looked for are knowledge of the subject matter, ability to comprehend the question and to construct an answer which uses clear examples to support the points made.</p> <p>Typical answers likely to include use of modelling to</p> <ul style="list-style-type: none"> • explore and refine aspects such as safety, balance, comfort, fit, grip, sizes of specific parts • test aspects such as performance of materials, assembly of parts, use in wet/dry conditions. 	4	Award marks using the best fit characteristics shown below.

An answer which falls into these categories may do so for a number of reasons. It is likely that		
0 – 1	2 – 3	4
<p>Candidate demonstrates a limited knowledge and understanding of the subject matter.</p> <ul style="list-style-type: none"> • there is a limited description of the use of modelling to develop the Boomer • there is limited reference to the Boomer • it demonstrates a limited knowledge and understanding of the subject matter • there are limited examples of the use of modelling • few valid points are made • it does not address the question – in this case 0 marks should be awarded. 	<p>Candidate demonstrates knowledge of the subject matter and an understanding of the main aspects.</p> <ul style="list-style-type: none"> • there is a description of the use of modelling to develop the Boomer • there is reference to the Boomer • it demonstrates a limited knowledge and understanding of the subject matter • there are examples of the use of modelling • a number valid points are made • it addresses the question. 	<p>Candidate demonstrates sound knowledge of the subject matter and a secure understanding of the main aspects.</p> <ul style="list-style-type: none"> • there is a clear description of the use of modelling to develop the Boomer • there is clear reference to the Boomer • it demonstrates a clear knowledge and understanding of the subject matter • there are clear examples of the use of modelling • a good number of valid points are made • it clearly addresses the question.

Question		Expected response	Max mark	Additional guidance
	(c)	<p>Candidates will be expected to have identified ergonomic issues which are likely to have been considered during the development of the Boomer and describe how they may have influenced the design.</p> <p>Typical answers are likely to include</p> <ul style="list-style-type: none"> • anthropometrics – influence on various parts of the Boomer. • physiology – influence on force required to retract/spin wheels, weight to lift • psychology – feeling of safety/stability. 	4	<p>Candidates must describe how the Boomer has been influenced by the ergonomic issue.</p> <p>1 mark awarded for each valid point identifying an ergonomic issue which has been considered and describing how it has influenced the design.</p> <p>A maximum of 2 marks may be awarded for a single extended answer on the same ergonomic issue.</p> <p>0 marks should be awarded for simply identifying ergonomic issues.</p>

Question		Expected response	Max mark	Additional guidance
6.	(a)	Candidates will be expected to describe the relationship between each stage of the life cycle and profitability of the product.	2	To gain full marks candidates must correctly reference the profitability at each stage.
	(b)	Candidates will be expected to outline reasons the sales of a product may decline. Typical answers are likely to include <ul style="list-style-type: none"> • saturation • better/cheaper products • out of fashion • faults. 	2	1 mark per valid point.
	(c)	Candidates will be expected to outline ways a company can extend the maturity stage and maintain the sales of a product. Typical answers are likely to include <ul style="list-style-type: none"> • make alterations/iterations • update • promotions • reduce price. 	2	1 mark per valid point.

Question		Expected response	Max mark	Additional guidance
	(d)	<p>Candidates will be expected to describe the impact planned obsolescence has on the manufacturer, consumer, and the environment.</p> <p>Typical answers are likely to include</p> <ul style="list-style-type: none"> • appropriate materials being used (last intended life of product) • potentially more sales • products may not last as long as some consumers would want • increased use of materials, potentially bad for environment. 	3	<p>1 mark for each valid description.</p> <p>To gain the maximum 3 marks, candidates must reference more than one of the following in their response: manufacturer, consumer and the environment.</p>

[END OF MARKING INSTRUCTIONS]