



National
Qualifications
2026

2026 Design and Manufacture

Advance Higher

Question Paper Finalised Marking Instructions

These marking instructions have been prepared by examination teams for use by Qualifications Scotland appointed markers when marking external course assessments.

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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

Question			Expected response	Max mark	Additional guidance
1.	(a)		Candidates are expected to describe the method(s) they used to evaluate the performance of the product(s) and the conclusions they reached. Typical answers are likely to refer to some of the following: • user trips • user trials • product comparison • tests • surveys	6	Candidates may refer to more than one product in their answer. Although there is an underlying body of design knowledge required to answer it, there is a wide range of possible answers. 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. Note that the answer must refer to the evaluation of the performance of product(s): general comments about evaluations will not address the question and should be awarded 0 marks. 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
Candidate demonstrates a limited knowledge and understanding of the subject matter. • limited reference is made to product(s) • limited description of the methods used • limited knowledge and understanding of the subject matter • limited reference to their conclusions • few valid points are made			Candidate demonstrates knowledge and understanding of the subject matter. • reference is made to product(s) • description of the methods used • knowledge and understanding of the subject matter • reference to their conclusions • some valid points are made		Candidate demonstrates sound knowledge of the subject matter and a secure understanding of the main aspects. • clear reference is made to product(s) • clear description of the methods used • clear knowledge and understanding of the subject matter • clear reference to their conclusions • valid points are made

Question			Expected response	Max mark	Additional guidance
	(b)		Candidates are expected to describe the features that allowed them to identify the manufacturing processes. Typical answers may include: - die cast/injection moulding – split lines, injection/ejection points, complexity, surface detail, etc - pierced – sheet material, shear marks, material removed from the centre	4	Candidates may refer to more than one product in their answer. Although there is an underlying body of design knowledge required to answer it, there is a wide range of possible answers. 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. Note that the answer must refer to product(s): general comments about processes will not address the question and should be awarded 0 marks. 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
Candidate demonstrates limited knowledge and understanding of the subject matter. - limited description of identifying features - few valid points are made - it does not address the question – in this case 0 marks should be awarded			Candidate demonstrates knowledge and understanding of the subject matter. - description of identifying features - a number of valid points are made		Candidate demonstrates sound knowledge of the subject matter and a secure understanding of the main aspects. - clear description of identifying features - a good number of valid points are made

Question			Expected response	Max mark	Additional guidance
	(c)		Candidates are expected to describe the methods they used to identify the materials used to manufacture the components of the product(s). Typical answers are likely to refer to: • float tests • burn tests • use of magnets • visual inspection • scratch tests	4	Candidates may refer to more than one product in their answer. Note that the answer must refer to the product(s); general comments about methods of investigation will not answer the question and should be awarded 0 marks. 1 mark awarded per valid statement.
	(d)		Candidates are expected to discuss the suitability of the assembly methods used in the product(s). Typical answers are likely to refer to: • access for maintenance • safety • similar and dissimilar materials • design for disassembly • watertight • standard components • temporary or permanent • impact on the environment	3	1 mark per valid point. No marks should be awarded for generic statements about assembly methods.

Question			Expected response	Max mark	Additional guidance
2.	(a)		Candidates are expected to describe significant changes to the product(s) and explain why these were a success or failure. Responses are likely to include reference to a range of factors such as: • aesthetics • function • performance • safety • economics • ergonomics	5	Candidates may refer to more than one product in their answer. 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. Note that the answer must refer to the product(s). 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
Candidate demonstrates a limited knowledge and understanding of the subject matter. • there is a description of a limited number of changes to the product(s) • there is a limited description of why the changes were a success or failure. • there is little reference to the product(s) • generic statements are made • few valid points are made • does not address the question – in this case 0 marks should be awarded			Candidate demonstrates knowledge and understanding of the subject matter. • there is a description of changes to the product(s) • there is a description of why the changes were a success or failure • there is reference to the product(s) • valid points are made • generally addresses the question		Candidate demonstrates sound knowledge of the subject matter and a secure understanding of the main aspects. • there is a description of several changes to the product(s) • there is a clear description of why the changes were a success or failure • there is detailed reference to the product(s) • many valid points are made • fully addresses the question

Question			Expected response	Max mark	Additional guidance
	(b)		Candidates are expected to explain the reasons for the significant changes to the product(s). Responses are likely to include reference to a range of reasons such as: • materials • manufacturing • technology • society • external factors • designers • safety • economics • ergonomics	5	Candidates may refer to more than one product in their answer. 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. Note that the answer must refer to the product(s). 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
Candidate demonstrates a limited knowledge and understanding of the subject matter. • there is a limited explanation of reasons for significant changes to the product(s) • there is little reference to the product(s) • generic statements are made • few valid points are made • does not address the question – in this case 0 marks should be awarded			Candidate demonstrates knowledge and understanding of the subject matter. • there is an explanation of reasons for significant changes to the product(s) • there is reference to the product(s) • valid points are made • generally addresses the question		Candidate demonstrates sound knowledge of the subject matter and a secure understanding of the main aspects. • there is a clear explanation of reasons for significant changes to the product(s) • there is detailed reference to the product(s) • many valid points are made • fully addresses the question

Question			Expected response	Max mark	Additional guidance
	(c)		Candidates are expected to describe the influence the product(s) may have had on society. Responses are likely to include reference to a range of reasons such as: • impact on lifestyle • trends • affordability/consumerism • convenience • economic	3	Candidates may refer to more than one product in their answer. Responses must be specific to the product(s) they researched. 1 mark per valid point.

Section 2

Question			Expected response	Max mark	Additional guidance
3.	(a)		Candidates are expected to explain other reasons why design opportunities occur. Responses are likely to include reference to: • new technologies available • global events • emergence of new products (spin-offs) • evaluation of existing products • legislation	4	0 marks for an explanation concerning opportunities related to environmental preservation. 1 mark per valid point.
	(b)		Candidates are expected to describe other ways the designer may have reduced the negative impact of the DuraOcean chair on the environment. Responses are likely to include reference to: • selection/volume of materials • assembly design • design of parts • local sourcing • reusing biproduct • not using toxic additives • minimising processing • maintaining tooling to avoid waste	2	1 mark per valid point.

Question			Expected response	Max mark	Additional guidance
	(c)		Candidates are expected to discuss the challenges that are associated with designing products to be more environmentally friendly. Responses are likely to include reference to: • raw material availability • higher material and manufacture costs • market stigma and political concerns • access to suitable manufacturing technology • limitations in materials and manufacture	2	1 mark per valid point.

Question			Expected response	Max mark	Additional guidance
4.	(a)		Candidates are expected to describe how consideration of safety would have influenced the design of the Alinker Bike. Responses are likely to include reference to: • stability of Alinker Bike • ability to stop (use brakes) • meeting legal requirements • ergonomic considerations • visibility	4	Note that the answer must refer to the Alinker bike: general comments will not address the question and should be awarded 0 marks. 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. 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
Candidate demonstrates limited knowledge and understanding of the subject matter. • there is a limited description of how consideration of safety would have influenced the design of the Alinker. • limited knowledge and understanding of the subject matter is demonstrated • limited reference to the Alinker bike • does not address the question			Candidate demonstrates knowledge of the subject matter and an understanding of the main aspects. • there is a description of how consideration of safety would have influenced the design of the Alinker • knowledge and understanding of the subject matter is demonstrated • reference to the Alinker bike • addresses the question		Candidate demonstrates sound knowledge of the subject matter and a secure understanding of the main aspects. • there is a clear description of how consideration of safety would have influenced the design of the Alinker • sound knowledge and understanding of the subject matter is demonstrated • clear reference to the Alinker bike • clearly addresses the question

Question			Expected response	Max mark	Additional guidance
	(b)		Candidates are expected to describe how other everyday products or spaces they are familiar with have been designed to be more inclusive. Candidates should refer to specific products or places. Responses are likely to refer to: • accessibility for wheelchairs • visuals for language barriers • lights for hearing impaired • textures and audio cues for visually impaired	4	1 mark per valid point.
	(c)		Candidates are expected to describe how the design of the Alinker Bike has been influenced by the requirement for it to last as long as possible. Answers are likely to include reference: • durable materials • standard components • ease of changing parts • suitable finishes	3	1 mark per valid point. To attract full marks, answers must reference Alinker bike.

Question			Expected response	Max mark	Additional guidance
5.	(a)		Candidates are expected to describe how morphological analysis or brainstorming could be used to generate ideas for the Boll Urban collection. Answers are likely to include reference to key points of the idea generation technique and how they would apply to Boll Urban collection.	4	Note that the answer must refer to the Boll Urban Collection: general comments will not address the question and should be awarded 0 marks. 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. Award marks using the best fit characteristics shown below. A maximum of 3 marks for any one idea generation technique.
An answer which falls into these categories may do so for a number of reasons. It is likely that:					
0–1			2–3		4
Candidate demonstrates limited knowledge and understanding of the subject matter. • limited description of the use of morphological analysis or brainstorming to generate ideas for the Boll Urban collection. • generic description of the stages of morphological analysis or brainstorming • limited reference to design of the Boll Urban collection • limited knowledge and understanding of the subject matter is demonstrated • few valid points are made • does not address the question			Candidate demonstrates knowledge of the subject matter and an understanding of the main aspects. • description of the use of morphological analysis or brainstorming to generate ideas for the Boll Urban collection. • description of the stages of morphological analysis or brainstorming • reference to design of the Boll Urban collection • knowledge and understanding of the subject matter is demonstrated • number of valid points are made • addresses the question		Candidate demonstrates sound knowledge of the subject matter and a secure understanding of the main aspects. • clear description of the use of morphological analysis or brainstorming to generate ideas for the Boll Urban collection. • clear description of the stages of morphological analysis or brainstorming • clear reference to design of the Boll Urban collection • sound knowledge and understanding of the subject matter is demonstrated • a good number of valid points are made • clearly addresses the question

Question			Expected response	Max mark	Additional guidance
	(b)		Candidates are expected to discuss how function and aesthetics have influenced the Boll Urban collection. Responses are likely to refer to: Function: • barrier • need to rest • sit • lean back Aesthetics: • visibility • contrast with concrete	4	Note that generic descriptions of function or aesthetics will not address the question and should be awarded 0 marks. 1 mark per valid point, maximum 3 marks for either function or aesthetics.

Question			Expected response	Max mark	Additional guidance
	(c)		Candidates will be expected to describe the types of graphics the designer would use to communicate and the purpose of the information. Responses are likely to refer to: Sketches: - early communication with client to explain ideas Working drawings/Technical drawings: - instructions to manufacturer, component suppliers - sizes, assembly etc Presentation graphics/CAD: - show proposal to client - get feedback from market	4	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. 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
Candidate demonstrates limited knowledge and understanding of the subject matter. - there is limited reference to types of graphics - there is limited reference to the purpose of the information - limited knowledge and understanding of the subject matter is demonstrated - few valid points are made - does not address the question			Candidate demonstrates knowledge of the subject matter and an understanding of the main aspects. - there is reference to types of graphics - there is reference to the purpose of the information - knowledge and understanding of the subject matter is demonstrated - a number of valid points are made - addresses the question		Candidate demonstrates sound knowledge of the subject matter and a secure understanding of the main aspects. - there is clear reference to types of graphics - there is clear reference to the purpose of the information - sound knowledge and understanding of the subject matter is demonstrated - a good number of valid points are made - clearly addresses the question

Question			Expected response	Max mark	Additional guidance
	(d)		Candidates are expected describe other ways designers can reduce the manufacturing costs of products. Responses are likely to refer to: • suitable manufacturing processes with low-cost tooling • use standard forms of supply • use standard components • subcontract • production and planning systems • source locally	3	1 mark per valid point.

Question			Expected response	Max mark	Additional guidance
6.	(a)		Candidates are expected to outline the potential risks to designers and manufacturers of launching a radical product and explain how they may be overcome. Responses are likely to include reference to: • nobody wants to buy it/too different (celeb endorsement) • too expensive (offer early bird discounts or incentives) • delay in coming to the market • unreliable technology	4	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. 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
Candidate demonstrates limited knowledge and understanding of the subject matter. • there is limited reference to the risks associated with launching radical products • there is limited reference to how the risks can be overcome • few valid points are made • does not address the question			Candidate demonstrates knowledge of the subject matter and an understanding of the main aspects. • there is reference to the risks associated with launching radical products • there is reference to how the risks can be overcome • a number of valid points are made • addresses the question		Candidate demonstrates sound knowledge of the subject matter and a secure understanding of the main aspects. • there is clear reference to the risks associated with launching radical products • there is clear reference to how the risks can be overcome • a good number of valid points are made • clearly addresses the question

Question			Expected response	Max mark	Additional guidance
	(b)		Candidates are expected to explain why an elastomer is a suitable material for the cushions. Typical answers are likely to refer to the following: • product features (complexity, form, aesthetics, ergonomics, assembly) • performance requirements of product or component parts • elasticity • flexibility • durability; elastomer lifespan in conditions of use	2	1 mark per valid point.

Question			Expected response	Max mark	Additional guidance
7.	(a)		Candidates are expected to outline research techniques which could be used to gain information from each of the following groups and explain why they are appropriate: • medical professionals • child patients Responses are likely to include reference to: Medical professionals: Techniques • questionnaires • interviews Reasons • access to professionals may be limited • less time consuming for professionals • interviews allow for more detail/variety of answers Child patients: Techniques • observation • user trials • interviews Reasons • less formal – children may not be able to give more formal feedback	4	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. A maximum of 3 marks if only one group is referred to. 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
Candidate demonstrates limited knowledge and understanding of the subject matter. • there is limited reference to research techniques • there is limited explanation of why the techniques are appropriate • few valid points are made • does not address the question	Candidate demonstrates knowledge of the subject matter and an understanding of the main aspects. • there is reference to research techniques • there is explanation of why the techniques are appropriate • a number of valid points are made • addresses the question	Candidate demonstrates sound knowledge of the subject matter and a secure understanding of the main aspects. • there is clear reference to research techniques • there is clear explanation of why the techniques are appropriate • there is reference to both groups researched • a good number of valid points are made • clearly addresses the question

Question			Expected response	Max mark	Additional guidance
	(b)		Candidates are expected to discuss the issues that may have influenced the selection of materials for the DOUD. Responses are likely to refer to: • hygiene • sterile • easy to grip/hold • chemical resistance • flexible	4	Candidates should refer to the issues relating to material selection for the DOUD. 1 mark per valid point.
	(c)		Candidates are expected to outline the issues that would be considered when choosing between two shot injection moulding and over-moulding for the manufacture of products. Responses are likely to include reference to: • volume required • capital investment • functional requirements (risk of debonding, etc) • performance requirements	2	1 mark per valid point.

[END OF MARKING INSTRUCTIONS]