

Cambridge International AS & A Level

DESIGN & TECHNOLOGY**9705/13**

Paper 1

October/November 2025

MARK SCHEME

Maximum Mark: 100

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2025 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

This document consists of **19** printed pages.

PUBLISHED**Generic Marking Principles**

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptions for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Annotations guidance for centres

Examiners use a system of annotations as a shorthand for communicating their marking decisions to one another. Examiners are trained during the standardisation process on how and when to use annotations. The purpose of annotations is to inform the standardisation and monitoring processes and guide the supervising examiners when they are checking the work of examiners within their team. The meaning of annotations and how they are used is specific to each component and is understood by all examiners who mark the component.

We publish annotations in our mark schemes to help centres understand the annotations they may see on copies of scripts. Note that there may not be a direct correlation between the number of annotations on a script and the mark awarded. Similarly, the use of an annotation may not be an indication of the quality of the response.

The annotations listed below were available to examiners marking this component in this series.

Annotations

Annotation	Meaning
	Correct point – mark awarded
	Incorrect point – no mark awarded
BOD	Benefit of doubt given – mark(s) awarded
Highlighter	Creditworthy response – highlight key points
REP	Repetition
L0	Marking level achieved
L1	Marking level achieved
L2	Marking level achieved
L3	Marking level achieved
SEEN	Page or response seen by examiner

Question	Answer	Marks	Guidance
1(a)(i)	Exemplar answers: Mild steel [1], steel [1], stainless steel [1], cast iron [1], iron [1] Accept other ferrous metals.	1	AOVR
1(a)(ii)	Exemplar answers: Brazing [1], welding [1], soldering [1], epoxy resin [1] Accept other permanent methods of joining a ferrous metal.	1	AOVR
1(a)(iii)	Exemplar answers: MDF: Available in sheets with a smooth surface finish [1] that will accept paint to match with the customers room decoration. [1] Strong / rigid / durable / stable enough [1] to support the weight of objects placed on the shelf. [1] Cheaper [1] than using hardwood. [1] Smooth surface [1] means it does not need an applied finish / can be wiped clean easily. [1]	2	AOVR
1(b)(i)	Exemplar answers: Keeps all the parts together [1] so they are not lost. [1] Can be used to promote the product [1] by having images of the product. [1] Prevents the product being damaged [1] during transportation. [1]	2	AOVR
1(b)(ii)	Exemplar answers: Label the materials so that they can easily be separated for recycling [1] to reduce the amount of raw materials used. [1] Use recycled materials for the packaging [1] to reduce the amount of materials going into landfill. [1] Use natural materials [1] that require a minimal amount of processing. [1] Use recyclable materials [1] so the packaging can be recycled. [1]	2	AOVR

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Question	Answer	Marks	Guidance
2(a)(i)	Isometric drawing [1]	1	
2(a)(ii)	Exemplar answer: Sketching [1] Quick to produce [1] and can easily be redrawn. [1]	3	AOVR
2(b)	Exemplar answers: Symbols are a common language [1] so universally understood. [1] Conventions are often shorter versions of words [1] so saves space on the drawings. [1] Dimensions [1] are set out in a standard way and unit. [1]	4	AOVR

Question	Answer	Marks	Guidance
3(a)	Exemplar answers: Acrylic is lighter [1] so easy to move around. [1] Acrylic will not shatter if dropped [1] so safer for the user. [1] Less expensive [1] than glass making the product more affordable. [1] Acrylic is less reflective than glass [1] allowing the picture to be more easily seen. [1] Acrylic can be cut [1] more easily than glass. [1]	4	AOVR
3(b)(i)	Exemplar answers: Mitre joint... Method of joining a corner [1] or suitable joining method for a picture frame. [2] Quality of sketches and notes. [0 – 2]	4	AOVR

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Question	Answer	Marks	Guidance
3(b)(ii)	Exemplar answers: Rebate / groove, adhesive... Any method of fixing [1] or suitable method of fixing the acrylic cover in the frame. [2] Quality of sketches and notes. [0 – 2]	4	AOVR
3(c)	Exemplar answers: Paint, varnish, wax, stain, lacquer, preservative, polish... [1] Paint is available in a wide range of colours [1] to match the decoration of the room [1] and can easily be applied with a brush. [1]	4	Award one mark for an appropriate named finish and a maximum of three further marks for the justification of the finish: • Award one mark for at least one valid point • Award two marks for some explanation of at least one reason • Award three marks for a fully developed response with at least two reasons fully justified.
3(d)	Exemplar answers: Wear leather gloves [1] when pouring the hot metal so you do not get burnt. [1] Work in a well-ventilated area [1] when pouring the metal so that you do not inhale fumes. [1]	4	AOVR

Question	Answer	Marks	Guidance
4(a)	Exemplar answers: More convenient for the customer to transport after purchasing as the product takes up less space. [1] Saves on manufacturing costs and time as workers do not have to assemble. [1] Price may be cheaper as it is cheaper to make, and the saving can be passed on to the customer. [1]	2	AOVR

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Question	Answer	Marks	Guidance												
4(b)	Exemplar answers: Could outsource production [1] saving on the need for specialist equipment. [1] Cheaper / quicker for specialist companies to produce components [1] in very large quantities. [1]	2	AOVR												
4(c)(i)	This question has a total of 8 marks. Instructions on how to mark this question follow on below. Process = 6 marks HandS = 2 marks Mark the response using the two grids below. Process <table><tr><td>L3</td><td>Sketches and notes fully describe all the stages in an appropriate making process. All the stages in the making process are in the correct order and all the tools and equipment required are correctly named.</td><td>5–6</td></tr><tr><td>L2</td><td>Sketches and notes describe most of the stages in an appropriate making process. Some stages in the making process may be in the incorrect order and some tools and equipment may be missing.</td><td>3–4</td></tr><tr><td>L1</td><td>Sketches and notes mention some stages in a making process and some tools or equipment. The making process may not be entirely appropriate to the task.</td><td>1–2</td></tr><tr><td>L0</td><td>No creditable response.</td><td>0</td></tr></table>	L3	Sketches and notes fully describe all the stages in an appropriate making process. All the stages in the making process are in the correct order and all the tools and equipment required are correctly named.	5–6	L2	Sketches and notes describe most of the stages in an appropriate making process. Some stages in the making process may be in the incorrect order and some tools and equipment may be missing.	3–4	L1	Sketches and notes mention some stages in a making process and some tools or equipment. The making process may not be entirely appropriate to the task.	1–2	L0	No creditable response.	0	8	AOVR
L3	Sketches and notes fully describe all the stages in an appropriate making process. All the stages in the making process are in the correct order and all the tools and equipment required are correctly named.	5–6													
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L0	No creditable response.	0													

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Question	Answer	Marks	Guidance									
4(c)(i)	HandS											
	<table><tr><td>L2</td><td>Consideration of health and safety precautions <u>specific</u> to the task.</td><td>2</td></tr><tr><td>L1</td><td>Some <u>generic</u> consideration of health and safety.</td><td>1</td></tr><tr><td>L0</td><td>No consideration of health and safety.</td><td>0</td></tr></table>	L2	Consideration of health and safety precautions <u>specific</u> to the task.	2	L1	Some <u>generic</u> consideration of health and safety.	1	L0	No consideration of health and safety.	0		
	L2	Consideration of health and safety precautions <u>specific</u> to the task.	2									
	L1	Some <u>generic</u> consideration of health and safety.	1									
	L0	No consideration of health and safety.	0									
Method that could be used for making the hardwood tray include turning, use of a router, carving, fabricating.												

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Question	Answer	Marks	Guidance												
4(c)(ii)	This question has a total of 8 marks. Instructions on how to mark this question follow on below. Process = 6 marks HandS = 2 marks Mark the response using the two grids below. Process <table><tr><td>L3</td><td>Sketches and notes fully describe all the stages in an appropriate making process. All the stages in the making process are in the correct order and all the tools and equipment required are correctly named.</td><td>5–6</td></tr><tr><td>L2</td><td>Sketches and notes describe most of the stages in an appropriate making process. Some stages in the making process may be in the incorrect order and some tools and equipment may be missing.</td><td>3–4</td></tr><tr><td>L1</td><td>Sketches and notes mention some stages in a making process and some tools or equipment. The making process may not be entirely appropriate to the task.</td><td>1–2</td></tr><tr><td>L0</td><td>No creditable response.</td><td>0</td></tr></table>	L3	Sketches and notes fully describe all the stages in an appropriate making process. All the stages in the making process are in the correct order and all the tools and equipment required are correctly named.	5–6	L2	Sketches and notes describe most of the stages in an appropriate making process. Some stages in the making process may be in the incorrect order and some tools and equipment may be missing.	3–4	L1	Sketches and notes mention some stages in a making process and some tools or equipment. The making process may not be entirely appropriate to the task.	1–2	L0	No creditable response.	0	8	AOVR
L3	Sketches and notes fully describe all the stages in an appropriate making process. All the stages in the making process are in the correct order and all the tools and equipment required are correctly named.	5–6													
L2	Sketches and notes describe most of the stages in an appropriate making process. Some stages in the making process may be in the incorrect order and some tools and equipment may be missing.	3–4													
L1	Sketches and notes mention some stages in a making process and some tools or equipment. The making process may not be entirely appropriate to the task.	1–2													
L0	No creditable response.	0													

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Question	Answer	Marks	Guidance									
4(c)(ii)	HandS											
	<table><tr><td>L2</td><td>Consideration of health and safety precautions <u>specific</u> to the task.</td><td>2</td></tr><tr><td>L1</td><td>Some <u>generic</u> consideration of health and safety.</td><td>1</td></tr><tr><td>L0</td><td>No consideration of health and safety.</td><td>0</td></tr></table>	L2	Consideration of health and safety precautions <u>specific</u> to the task.	2	L1	Some <u>generic</u> consideration of health and safety.	1	L0	No consideration of health and safety.	0		
	L2	Consideration of health and safety precautions <u>specific</u> to the task.	2									
	L1	Some <u>generic</u> consideration of health and safety.	1									
	L0	No consideration of health and safety.	0									
Methods that could be used for making one polymer end cap include fabricating, turning, vacuum forming, 3D printing...												
Do not accept injection moulding as this is not a one-off production method for the end cap. The question clearly states one end cap.												

Question	Answer	Marks	Guidance
5(a)(i)	Exemplar answers: So that the user can easily identify parts [1] such as the handle for raising and lowering the height of the cut. [1] So that the mower looks more attractive [1] to potential purchasers. [1] Dangerous or moving parts [1] might be made of bright colours for easy identification / to make people aware. [1]	2	AOVR
5(a)(ii)	Exemplar answers: The basket will be lighter [1] and easier for the user to detach and empty. [1] The basket will be less likely to corrode [1] when in contact with wet grass. [1] Plastic will not get [1] as warm as metal that could burn the user's hand when emptying the grass cuttings. [1]	2	AOVR

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Question	Answer	Marks	Guidance
5(a)(iii)	Exemplar answers: The handle folds to make the mower more compact [1] when in storage. [1] The handle folds to make the mower smaller [1] when transporting in a car boot. [1]	2	AOVR
5(b)(i)	Exemplar answers: The battery might be flat when you want to use [1] and will need to be recharged before starting to cut the grass. [1] The battery might run out of charge when mowing a large lawn [1] meaning the user will have to wait for it to be recharged. [1] Increased electrical charges [1] as you have to keep recharging the battery. [1]	2	AOVR
5(b)(ii)	Exemplar answer: Mains electricity (using a power socket) [1] petrol [1], diesel [1], solar [1] Provides an uninterrupted supply of electricity. [1]	2	AOVR including powered by hand.
5(c)(i)	Exemplar answers: Sketches and notes show that the shape of the 'ribs' on the watering can provides rigidity.	3	
5(c)(ii)	Exemplar answers: Sketches and notes show that a polymer identification symbol has been moulded into the watering can.	3	
5(d)	Exemplar answers: No need to carry water [1] from one place to another. [1] Provides the correct amount of water [1] so plants should not be over watered. [1] Can be operated on a timer [1] so that plants can be watered if you are away on holiday or at an appropriate time of the day. [1]	4	AOVR

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Question	Answer	Marks	Guidance
6	Use the level descriptions in Tables A1 and A2 to mark candidates' responses to this question. Responses may include some of the following ideas, but all valid material must be credited. • Understanding that a more inclusive product is adapted for users with specific needs. • Examples of suitable products could be electronic devices, books, tools, a suitcase, cycle... • Understanding of the specific needs of young children who may have limited grip / strength, reduced reach, limited technological understanding, little awareness of health and safety... • Modifications to a product to accommodate the young child such as adding cartoon characters, bright colours or recorded sound to books, limited function tools such as a rechargeable drill, smaller suitcases based on cartoon characters, redesigning handles and grips, adding covers to electronic products that will not break if dropped, simplified methods of operating, reducing the weight of products...		The answer can be structured as freehand sketches with annotations.

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Generic level descriptions mark schemes Use **Tables A1** and **A2** to give marks for each candidate response for **Question 6**.

Table A1 AO2 Application and communication

Candidates should be able to:

- Apply knowledge, understanding and skills in a variety of contexts (AO2a)
- Communicate knowledge and understanding using sketches, notes and a range of graphical techniques, including conventions and specialist vocabulary (AO2b).

Level	Description	Marks
Level 3	• The modification shows application of accurate relevant knowledge. (AO2a) • The modification shows a clear application of the given context. (AO2a) • The modification is communicated with precision and clarity. (AO2b) • Sketches have detailed correct annotations, including appropriate conventions and specialist vocabulary. (AO2b)	5–6
Level 2	• The modification shows application of some relevant knowledge. (AO2a) • The modification may not be wholly relevant to the context. (AO2a) • The modification is communicated. (AO2b) • Sketches have appropriate annotations, with some conventions and specialist vocabulary. (AO2b)	3–4
Level 1	• The modification shows application of limited relevant knowledge. (AO2a) • The modification shows a basic understanding of the given context. (AO2a) • The modification is partially communicated. (AO2b) • The sketches have some annotations, with limited specialist vocabulary and conventions. (AO2b)	1–2
Level 0	• No creditable response.	0

Table A2 AO4 Analysis and evaluation

Candidates should be able to:

- Analyse, evaluate and compare products (AO4a)
- Identify and/or propose how to improve and/or modify products (AO4b)
- Analyse wider issues in design and technology (including cultural, economic, environmental and social factors) (AO4d)

Level	Description	Marks
Level 3	• The modification is based on thorough and detailed analysis, evaluation and/or comprehensive comparison of products. (AO4a) • The modification is appropriate and fully functions as intended. (AO4b) • The modification shows a thorough analysis of a broad range of wider issues in design and technology. (AO4d) • The modification successfully meets the needs of the user(s)/context. (AO4d)	5–6
Level 2	• The modification is based on an analysis, evaluation and/or comparison of products. (AO4a) • The modification is appropriate and mostly functions as intended. (AO4b) • The modification shows some evidence of analysis of a few wider issues in design and technology. (AO4d) • The modification mostly meets the needs of the user(s)/context. (AO4d)	3–4
Level 1	• The modification shows little or incomplete analysis, evaluation and/or comparison of products. (AO4a) • The modification is mostly appropriate and partially functions as intended. (AO4b) • The modification shows little or incomplete analysis of any wider issues in design and technology. (AO4d) • The modification meets the needs of the user(s)/context in a limited way. (AO4d)	1–2
Level 0	• No creditable response.	0

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Question	Answer	Marks	Guidance
7	Use the level descriptions in Tables B1 and B2 to mark candidates' responses to this question. Responses may include some of the following ideas, but all valid material must be credited. • Understanding that the production processes are matched to the scale of production, e.g. injection moulding is only suitable for a large production run. • Whilst there may be several different production processes that can be used to produce a product, manufacturers generally choose the one that will be the most cost effective. • Hand production methods are best suited to one-off products. • Automated production, such as CAM processes, are best suited to high volume products. • High volume production runs justify a large investment in technology, e.g. a laser cutter. • Hand production methods, for one off products, allow modifications to suite individual customer requirements to easily be made, e.g. a paint finish of a particular colour. • Batch production often involves making several identical products and then repeating for further batches with minor variations, e.g. green wellington boots and then red wellington boots. • Mass production process generally offers little flexibility in terms of adapting the product to individual customer requirements. • The setup costs for mass production can be high but are distributed across the production run, e. g. the cost of producing a former is shared across the entire production run. • Higher production runs generally decrease the setup costs for each individual product. • A one-off production process often requires workers that are skilled in a particular area, e.g. forging metal.	12	The answer must be structured in paragraphs with whole sentences.

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Question	Answer	Marks	Guidance
7	• Mass produced production methods often require workers that are highly trained in the use of computer technology. • A one-off production worker can often continue to use a skill for a long period of time without further training, e.g. a bench carpenter. • Workers involved in mass production require regular update training to keep up to date with advancements in production technology.		

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Use **Tables B1** and **B2** to give marks for each candidate response for **Question 7**.

Table B1 AO1 Knowledge and understanding

Candidates should be able to:

- Demonstrate knowledge and understanding of the impact of design and technology on society (including cultural, economic, environmental and social factors) (AO1c).

Level	Description	Marks
Level 3	• The response thoroughly demonstrates accurate and relevant knowledge of the topic. (AO1c) • The response shows thorough understanding of the impact on society and uses relevant examples and supporting evidence. (AO1c)	5–6
Level 2	• The response includes some accurate and relevant knowledge of the topic. (AO1c) • The response shows some understanding of the impact on society and includes examples and supporting evidence some of which may be relevant to the topic. (AO1c)	3–4
Level 1	• The response shows limited knowledge of the topic and some points may not be relevant. (AO1c) • The response shows limited understanding of the impact on society. There may be limited use of examples and supporting evidence may be of limited relevance. (AO1c)	1–2
Level 0	• No creditable response.	0

Table B2 AO4 Analysis and evaluation

Candidates should be able to:

- Analyse, evaluate and compare products (AO4a)
- Analyse wider issues in design and technology (including cultural, economic, environmental and social factors) (AO4d)

Level	Description	Marks
Level 3	• The response thoroughly analyses, evaluates and/or compares products with relevant and detailed supporting evidence. (AO4a) • Detailed discussion of more than two wider issues in design and technology. The analysis is well supported with relevant and detailed information. (AO4d)	5–6
Level 2	• The response analyses, evaluates and/or compares products with supporting evidence which is not always relevant. (AO4a) • Discussion of at least two wider issues in design and technology. The analysis is supported with relevant information. (AO4d)	3–4
Level 1	• The response shows little or incomplete analysis, evaluation and/or comparison of products. (AO4a) • Description of at least one wider issue in design and technology. The description is supported with limited relevant information. (AO4d)	1–2
Level 0	• No creditable response.	0