CAMBRIDGE
International Education

Cambridge International AS & A Level

DESIGN AND TECHNOLOGY **9705/11**

Paper 1 AS Level Written Paper **May/June 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 May/June 2025 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

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: Aluminium [1], copper [1], brass [1], duralumin [1] Allow any non-ferrous metal including precious metals, such as gold or silver.	**1**	AOVR Do **not** award a mark for stainless steel.
1(a)(ii)	Exemplar answers: High impact polystyrene (HIPS) [1], polyvinyl chloride (PVC) [1], polystyrene (PS) [1] Award marks for just acronyms such as ABS, PLA, PMMA and PP.	**1**	AOVR Do **not** award a mark for plastic or polymer.
1(a)(iii)	Exemplar answers: Easy to cut/shape and join [1] to make the base. [1] Can be painted [1] so the base can be different colours. [1] Aesthetically pleasing [1] if given a coat of clear varnish. [1] Pine is relatively inexpensive to purchase [1] so it is a cost effective for the base. [1] Pine has antibacterial properties [1] so easy to keep hygienic. [1] Strong [1] so it can resist pressure without splitting. [1] Has moderate resistance to moisture [1] so will not be damaged by spilt drinks. [1]	**2**	AOVR Property of pine = 1 mark (award for stating it is a softwood) Description of why the property makes it suitable for the base = 1 mark
1(b)(i)	Exemplar answer: A switch (SPST) [1] will switch the LED on and off. [1] An LDR can automatically [1] switch on the LED in low light. [1] Other acceptable input components include battery, touch sensor, thermistor, PIR, voice activation (even if component not named)	**2**	AOVR Input component = 1 mark Description of the function of the input component in the lamp = 1 mark Do **not** award the marks if a process or output component is named and then described.
1(b)(ii)	Exemplar answer: The LED converts electrical energy [1] into light. [1] Electric current [1] passes through a diode that emits light. [1]	**2**	AOVR Emits light = 1 Description of how an LED works = 1

Question	Answer	Marks	Guidance
2(a)(i)	Answer: Gantt chart [1]	**1**	
2(a)(ii)	Exemplar answers: Flowchart [1] Clearly shows the stages/processes in production [1] and the sequence of making. [1] Materials or cutting lists [1] Clearly shows the materials [1] and number/sizes of the parts required to make a product. [1]	**3**	Do **not** accept working drawings, exploded drawings.as planning drawings as they are not under planning drawings in the syllabus. Award marks for the correct explanation of why a planning drawing (flowchart, materials list or cutting list) would be used even if the name is incorrect.
2(b)	Exemplar answers: Saves on travelling time [1] as participants attend remotely. [1] Documents can be shared on screen [1] and easily edited. [1] Saves on costs [1] as people do not have to travel. [1] Can be recorded [1] so there is a record of the meeting. [1] Chat function [1] allows informal discussions. [1] Printed documents can be reduced/not required [1] so environmentally friendly. [1] Conversations can be recorded [1] and listened to later to check facts. [1] People can be put into breakout rooms [1] to discuss specific aspects of a project. [1] Reduces carbon footprint [1] as people do not need to travel to a specific place. [1] Cheaper [1] as you do not need to pay for travel or accommodation. [1] Can work remotely [1] and not be restricted to office times. [1] Being connected remotely allows instant feedback [1] and decision to be made rather than waiting for an email response. [1]	**4**	AOVR The first mark is for the advantage and the second mark for some explanation or reasoning. E.g. Cost effective [1 0], Cost effective because you do not need to travel. [1 1]

Question	Answer	Marks	Guidance
3(a)	Exemplar answers: The size of the base must be large enough to be stable [1] so that the stand does not fall over. [1] Accept answers that refer to size/cost and size/weight. Using PVC for the frame of the stand means that it will not require a finish [1] that could be expensive and time consuming to apply. [1] Accept answers that refer to weatherproof, recyclable, available in a range of colour, lightweight, easy to join and easy to move around.	**4**	AOVR The first mark is for the factor and the second mark for some explanation or reasoning. E.g. Large base [1 0], Large base means it will be stable, and the stand will not fall over [1 1]
3(b)(i)	Exemplar answers: Cut and glued, plastic welding Suitable **permanent** joining method (not nails) [1] Quality of sketches and notes [0 – 3]	**4**	Appropriate method = 1 Quality of sketches and notes to show the method: Simple sketches with few or no annotations and method may be inappropriate = 1 or Good sketches with appropriate notes/labels = 2 or High quality sketches with detailed annotations = 3
3(b)(ii)	Exemplar answers: Clips, slots, screw fastenings Suitable **temporary** joining method [1] Quality of sketches and notes [0 – 3]	**4**	Appropriate method = 1 Quality of sketches and notes to show the method: Simple sketches with few or no annotations and method may be inappropriate = 1 or Good sketches with appropriate notes/labels = 2 or High quality sketches with detailed annotations = 3
3(c)	Exemplar answers: Wear a face mask [1] when cutting with a power saw. [1] Make sure the work is securely clamped [1] when being drilled. [1]	**4**	AOVR

Question	Answer	Marks	Guidance
3(d)	Exemplar answers: Paint [1] veneer [1], laminate [1] Available in a wide range of colours [1] and can be easily applied [1] with just a brush or roller. [1]	**4**	For justification: Reason = 1 or Reason explained = 2 or Full justification of choice = 3 If the finish is incorrect, oil dipping, do **not** award marks for the justification.

Question	Answer	Marks	Guidance
4(a)	Exemplar answers: The back will prevent books slipping off the back/falling out of the back of the bookcase and getting damaged/lost. [1] The back will provide greater stability to the structure [of the bookcase so that it will not break or collapse under the weight of many books. [1] A back will protect the wall. [1] Support the weight of the shelves. [1] Bookcase can easily be fitted to a wall. [1]	**2**	AOVR Do **not** accept improves aesthetics.
4(b)	Exemplar answers: Use low energy lighting in the workshop/factory [1] so it reduces the energy costs for the manufacturer. [1] Make sure the workshop/factory is well insulated [1] so that less energy is used to heat the factory which is better for the environment/reduce costs. [1] Updating machines [1] to use energy efficient machinery [1] Accept answers that refer to making by hand, rather than using machines, and purchasing the material in the correct size so it needs less, or no, machining.	**2**	AOVR Accept answers that focus on one-off, batch or mass production. The focus must be on reducing the amount of energy used to manufacture the bookcase, so purchasing materials the correct size would be acceptable. Do **not** award marks if the focus is on using energy from more sustainable sources.
4(c)(i)	The question asks candidates to use sketches and notes to describe a method of making a corner joint in 18 mm thick MDF. This question has a total of 8 marks. Instructions on how to mark this question follow on below. Process = **6** marks HandS = **2** marks	**8**	If the method is inappropriate, limit to Level 1. If a good drawing of the solution is shown, with some details of tools and equipment to be used, but no real description of the method of making, limit to Level 2.

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>4(c)(i)</td><td>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>
Health and safety
<table><tr><td>L2</td><td>Consideration of health and safety precautions specific to the task.</td><td>2</td></tr><tr><td>L1</td><td>Some generic 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></td><td></td><td></td></tr>
</table>

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>4(c)(ii)</td><td>The question asks candidates to use sketches and notes to describe a method of making the height of the shelves on the bookcase adjustable.

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></td><td>8</td><td>If the method is inappropriate, limit to Level 1.

If a good drawing of the solution is shown, with some details of tools and equipment to be used, but no real description of the method of making, limit to Level 2.</td></tr>
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<table>
<tr><td>L2</td><td>Consideration of health and safety precautions specific to the task.</td><td>2</td></tr>
<tr><td>L1</td><td>Some generic 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></td><td></td><td></td></tr>
</table>

Question	Answer	Marks	Guidance
5(a)(i)	Exemplar answer: The digital display offers real time information [1] on the drink that is being prepared. [1] Visible [1] on a dark night or in dimly lit conditions. [1] So the user knows what they have do [1] to make/select/pay for their drink. [1] So the user knows [1] the machine is out of order. [1] Language could be adapted [1] for use in different countries. [1]	**2**	AOVR The responses must relate to the digital display, as indicated by the label on Fig. 5.1, **not** the images or tray.
5(a)(ii)	Exemplar answer: The images on the coffee machine visually shows customers [1] the size and type of drink that they will get. [1] It lets the customer know what size cup [1] they need to place under the dispenser. [1] So that a customer can select a drink [1] without having to understand the language. [1]	**2**	AOVR The responses must relate to the images, as indicated by the label on Fig. 5.1, **not** the digital display or tray.
5(a)(iii)	Exemplar answer: The tray is designed to collect any spillages when [1] drinks are dispensed into cups. [1] The tray can be removed [1] to be easily cleaned/empty spillages. [1] It prevents a mess being made on the table [1] by the excess coffee spilling out. [1] Provides a place to place the cup [1] to prevent spills.[1]	**2**	AOVR The responses must relate to the tray, as indicated by the label on Fig. 5.1, **not** images or the digital display.
5(b)	Exemplar answers: The parts of the coffee machine are made of materials, such as stainless steel, [1] that can easily be cleaned. [1] The parts of the coffee machine can easily be removed [1] for replacement if broken.[1]	**4**	AOVR

Question	Answer	Marks	Guidance
5(c)(i)	Exemplar answer: It is more hygienic [1] as the customer's hands do not touch the coffee machine. [1] Accept responses that refer to saving time by ordering remotely and then the coffee is ready when you arrive at the machine. Accept answers that refer to the owner of the coffee machine, for example reprogramming the prices, re-ordering when coffee is running low. Accept answers that refer to paying for your coffee.	**2**	AOVR
5(c)(ii)	Exemplar answer: Remote control for a TV, garage door, voice activated control for a music playing device.	**2**	AOVR Award one mark for an appropriate sketch and one mark for supporting annotation/labels.
5(d)(i)	Exemplar answer: Accept answers that refer to the corrugated card protecting the user from the hot coffee. Accept answers that refer to the polymer lid has an opening that prevents spilling the hot coffee. Sketches and notes show the diameter of the cup is based upon the size of a hand grip.	**3**	Response refers to a part or feature of the cup with reference to ergonomics (sketches or notes) = 1 Sketch and/or notes show how a person will interact with the identified part of the cup = 1 Excellent understanding of the term ergonomics = 1 Do **not** award the first mark for just drawing a part of the cup. Sketches and notes are required for maximum marks.
5(d)(ii)	Exemplar answer: Sketches and notes show the sleeve for the cup is made from corrugated card and can be recycled. Sketches and notes show the polymer lid has a symbol moulded into it which identifies the plastic for recycling. Sketches and notes show the three parts can be separated for recycling.	**3**	Response refers to a part or feature of the cup with reference to sustainability (sketches or notes) = 1 Sketch and/or notes show how sustainability applies to the identified part of the cup = 1 Excellent understanding of the term sustainability = 1 Do **not** award the first mark for just drawing a part of the cup. Sketches and notes are required for maximum marks.

Question	Answer	Marks	Guidance
6	This question has a total of 12 marks. Instructions on how to mark this question follow on below. Table A1 = **6** marks Table A2 = **6** marks 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 medicine packaging, controls on home appliances, handrails and grabs, raised tactile guides in public places. • Understanding of the specific needs of a person with a visual impairment, such as unable to see small details or colour blindness • Modifications to the product to accommodate the impairment such as a larger text on medicine packaging, larger images on instructions, use of brighter colours to highlight potential trip hazards on stairs, audible warnings on escalators.	**12**	The answer can be structured as freehand sketches with annotations.

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

Question	Answer	Marks	Guidance
7	This question has a total of 12 marks. Instructions on how to mark this question follow on below. Table B1 = **6** marks Table B2 = **6** marks 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. • Reference to design movements such as Bauhaus Streamlining, Minimalism, Modernism and Postmodernism • Fashion and trends provide a driving force for designers and manufacturers that can have a huge impact on the volume of sales • People like to be seen with products that are in fashion and follow the latest trends, so this increases sales • Designers and manufacturers generally seek a high volume of sales, as this reduces production costs and increase profit • A new trend can increase sales, even though the product it is replacing is still perfectly serviceable E.g. new mobile phones • Older, or out of fashion, products can provide a cheaper alternative that can be marketed in less well-developed countries	**12**	The answer must be structured in paragraphs with whole sentences.

Question	Answer	Marks	Guidance
7	• Peer pressure makes new products very desirable as people want to be seen with the latest product • Products can be designed with a limited lifespan as the designers know they will be replaced with a the latest 'fashion' in a relatively short period of time • Continually replacing products to follow the latest fashion can be expensive but also creates recycling issues if the old product is not designed to be recycled • Designers look for emerging fashions and trends so that their products hit the market when they are most desirable • Do designers follow fashion and trends or dictate the latest fashion and trend? • Products can be designed to be adaptable, for example covers and parts be replaced, so that they can be adapted to follow the latest trends • Examples of products that might be given include mobile phones, clothing, vehicles, houses...		

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