CAMBRIDGE
International Education

Cambridge International AS & A Level

DESIGN & TECHNOLOGY **9705/13**

Paper 1 AS Level Written Paper **May/June 2026**

MARK SCHEME

Maximum Mark: 100

Published

This mark scheme contains the instructions and marking guidance that our examiners used to mark candidate responses for this component.

Before they start marking, examiners complete a standardisation process. They review a range of candidate responses and discuss the mark scheme in detail to agree which answers can and cannot be accepted. Examiners award marks where it is clear that candidate responses have met the requirements of the mark scheme. These requirements may vary between different components or different versions of the same component, depending on the exact requirements of the question and the candidate responses seen during the standardisation process.

Sometimes, our mark schemes may allow marks to be awarded to responses which contain elements that are factually incorrect or for content not covered by the syllabus. We do this in response to the demands of a specific question to support candidates and make sure that our assessments are fair. However, these allowances should not be used as a guide for teaching and learning.

We cannot discuss the mark scheme with schools, and we recommend that schools read the mark scheme together with the assessment material and the Principal Examiner Report for Teachers.

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General marking principles

All examiners must apply these marking principles when marking candidate responses.

1	Examiners must award marks for each response in line with: • the specific **content** defined in the mark scheme • the specific **skills** defined in the mark scheme or in the level descriptions • the **standard of response** required as exemplified by the standardisation scripts.
2	Examiners must award **whole marks** (not half marks, or other fractions).
3	Examiners must award marks **positively**. This means that: • marks are not deducted for errors or omissions • marks are awarded for correct/valid answers as defined in the mark scheme and also for **other valid answers** which go beyond the scope of the syllabus and mark scheme referring to your team leader as appropriate • the quality of spelling, punctuation and grammar are judged **only** when the mark scheme indicates that these features are **specifically assessed** in the question. However, the meaning of all responses must be unambiguous.
4	Examiners must **consistently** apply the requirements of the mark scheme and any rules for what to do when candidates have not followed instructions correctly.
5	Examiners must use the **full range of marks** defined in the mark scheme, unless limited by the quality of the candidate responses seen.
6	Examiners must award marks according to the mark scheme and **must not** award marks with grade thresholds or grade descriptions in mind.

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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

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Question	Answer	Marks	Guidance
1(a)(i)	Vacuum forming [1], Vacuum moulding [1], Blow moulding [1], Press forming [1]	**1**	
1(a)(ii)	Thermochromic ink [1], thermochromic pigment [1], thermochromic material [1], thermochromatic [1] Accept just thermochromic [1] but **not** just thermo.	**1**	
1(a)(iii)	Exemplar answers: The handle of the spoon [1] is designed to be the correct size and shape to fit comfortably in a child's hand. [1] Part A shaped [1] to fit comfortably in the child's hand/mouth. [1] By having shaped handle [1] of certain length for child's hand. [1] Having a flexible material, [1] so it does not hurt child's mouth. [1] AOVR	**2**	
1(b)(i)	Exemplar answers: Enhances the appearance by producing a shiny/silk/ finish/ including keeps moisture out/protects colour [1] on specific places or 'spots' of the printed design/letters/image. [1] AOVR	**2**	
1(b)(ii)	Exemplar answers: The card backing sheet can easily be separated from the polymer blister and then both materials recycled [1] so that they can then be used to make other products. [1] Card can be recycled/polymer can be recycled [1] as the packaging has material identification symbols to allow the user to recognise the material. [1] AOVR	**2**	

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Question	Answer	Marks	Guidance
2(a)(i)	Column heading: stages [1], stages in manufacturing/making task/process [1], process [1], step [1] Examples: draw out the design on a sheet of card [1], collect materials [1], cut large sheet of card to the correct size for the product [1] ... AOVR	**2**	
2(a)(ii)	Exemplar answers: A flow chart can have a decision box which shows different routes based on whether the criteria has been met [1] rather than the Gantt chart which is more linear. [1] Different shapes for stages of production allow more visual recognition in a flow chart [1] which makes it easier for the manufacturer to follow. [1] Flow charts allow feedback within the system [1] which allows the manufacturer to include quality control checks. [1] A flow chart is used to showing details of stages in making [1] whereas a Gantt chart shows an overview of the project and time. [1] AOVR	**2**	
2(b)	Exemplar answers: Helps promote the efficient use of time during manufacture [1] as all the required materials can be purchased in advance. [1] Reduces the amount of space required to store materials [1] as only the materials required for manufacture are purchased. [1] Allows material costs to be accurately determined [1] therefore promotes efficient use of materials. [1] AOVR	**4**	

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Question	Answer	Marks	Guidance
3(a)(i)	Exemplar answers: The acrylic top is dimensionally stable in that it will not shrink, expand twist or warp [1] under different atmospheric conditions/temperatures. [1] Dimensional stability is important so that pieces do not change shape/warp/deform under pressure. [1] For, example acrylic does not react to moisture. [1] AOVR	**2**	
3(a)(ii)	Exemplar answer: The stainless-steel supports will not rust if exposed to moisture [1] and will retain their pleasing appearance. [1] AOVR	**2**	
3(b)(i)	Suitable temporary method of joining beech at corner A shown using sketches and notes. [1] Quality of communication of the correct process of temporarily joining the beech frame – limited detail [1] good [2] or excellent communication/annotation/arrows. [3] Suitable methods of joining corner **A** include: KD fittings, bolts, screw fittings, push fittings, dowels... AOVR	**4**	Do **not** accept permanent methods of joining. If permanent method shown/named, do **not** award marks for communication. If correct joining method named with no drawings, award a maximum of one mark.

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Question	Answer	Marks	Guidance
3(b)(ii)	Suitable method of temporarily joining stainless-steel tube to acrylic sheet shown using sketches and notes. [1] Quality of communication of the correct process – limited detail [1] good [2] or excellent communication/annotation/arrows. [3] Suitable methods of joining stainless-steel and acrylic sheet include: Screw fasteners, push friction fittings, support blocks on side, cutting screw thread/inserting bolt... AOVR	**4**	Do **not** accept permanent methods of joining. If permanent method shown/named, do **not** award marks for communication. If correct joining method named with no drawings, award one mark maximum.
3(c)	Exemplar answer: Polyurethane varnish [1] Polyurethane varnish provides a durable finish [1], so the wood will not get scratched, but it is clear [1] so it will allow the grain of the wood to be seen. [1] One mark for naming a suitable finish e.g. varnish, Danish oil, furniture wax, stain, linseed oil, resin, epoxy resin… Up to 3 marks for the justification – a reason given [1] **or** some explanation [2] **or** full justification. [3] AOVR	**4**	Do **not** accept paint as this would hide the grain of the beech timber.

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Question	Answer	Marks	Guidance
3(d)	Exemplar answers: If a part of the coffee table is broken or damaged the part can easily be replaced [1], and the user does not need to buy a new coffee table. [1] The table could be sold as a flat pack with the temporary joining methods [1] to reduce transportation space, therefore reducing pollution. [1] The parts of the coffee table can easily be separated so that the different materials can be recycled [1] rather than the coffee table being put into landfill/incinerated. [1] AOVR	**4**	

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Question	Answer	Marks	Guidance
4(a)	**Overall** Three-dimensional (3D) drawing [1] Correct shape 3D package drawn [1] Correct shape window added (award if package shape incorrect) [1] **Quality** Quality of sketch and proportions: Satisfactory [1], **or** good [2] **or** excellent [3] **Rendering** Rendering of the window/s: Good [1] **or** excellent [2] Do **not** award rendering mark if no enhancement technique used on the window. Rendering of the card should be credited under quality.	**8**	

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>4(b)</td><td>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>
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></td><td>8</td><td>Accept methods that describe making more than one package.</td></tr>
</table>

Question	Answer	Marks	Guidance
4(c)(i)	Exemplar answers: Details of ingredients printed on the package [1] to avoid users with allergies eating things that will make them unwell. [1] Best before date included on the package [1] to prevent users eating sandwiches that are past their best. [1] AOVR	**2**	
4(c)(ii)	Exemplar answers: Place for a sticker to be added to the package to show the type of sandwich that is inside the package [1] so the customer knows what they are buying and can choose the option they want for their lifestyle. [1] Large and/or brightly coloured text shows particular features [1] such as the product is suitable for vegetarians or low in fat. [1] Easily identifiable surface graphics [1] as customers need to read it quickly if they are getting food on the go. [1] Recycling logos to show material type [1] so that customers can recycle the package after use [1] AOVR	**2**	

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Question	Answer	Marks	Guidance
5(a)(i)	Exemplar answers: The cover is included for safety of the user [1] so that clothing does not get caught in the moving parts. [1] To cover the unattractive mechanism [1] to improve the overall aesthetics of the bicycle. [1] If the mechanism is exposed, dirt could get into the mechanism [1] which can stop it from working effectively. [1] AOVR	**2**	
5(a)(ii)	Exemplar answers: The height adjustable seat is included so that people of different heights can use the exercise bicycle [1] which increases the potential market for the product. [1] The height ensures the users legs are in the correct position [1] which could prevent injury to the user [1] AOVR	**2**	
5(a)(iii)	Exemplar answers: The display panel gives feedback to the user [1] on such things as the distance cycled or time spent exercising. [1] The display can show information which can help to motivate the user [1] for example they can see how far they have cycled and aim to cycle further. [1] AOVR	**2**	

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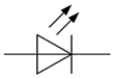
Question	Answer	Marks	Guidance
5(b)	Battery [1], cells [1] [1] To allow the circuit to be switched on and off. [1] [1] or  [1]	**4**	Do **not** award a mark for cell.
5(c)	Exemplar answers: The walls and ceiling of the factory could be insulated with natural materials [1] to prevent energy heat loss and reduce the amount of heat produced by burning fossil fuels. [1] Lighting for the factory could be powered by solar panels [1] which use the sun to create energy. [1] The energy required for larger machinery could be powered by renewable sources [1] such as wind power of solar power. [1] AOVR	**4**	
5(d)(i)	Sketches and notes show a clear understanding that motion transmission transmits the same type of motion from one place to another. [1] No creditable response [0] **or** Not all parts clearly identified in the transmission of the motion [1] **or** Sketches and notes clearly show the input, transmission and output of an energy transmission mechanism. [2] AOVR including: Pulley wheels, gears, linkages...	**3**	

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Question	Answer	Marks	Guidance
5(d)(ii)	Sketches and notes show that motion conversion converts one type of motion to another type of motion. No creditable response [0] **or** Not all parts clearly identified in the conversion of the motion [1] **or** Clear sketches and notes show the input, conversion and output motions of a motion conversion mechanism. [2] AOVR including: Pulley wheels, linkages, cams, gear trains...	**3**	

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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 should include the following, but all valid material must be credited. • identify a product to be modified for a specific age group • propose a modification that will appeal to the specific age group • analyse how the modification meets the specific age group. Examples of specific age groups could include teenagers, students, elderly. Examples of specific products include simplified electronic devices for pre-school children, work desk with phone holder/light for teenagers, furniture which can have dual purpose for students in a small space, modified kitchen tap for elderly age group. The answer can be structured as freehand sketches with annotations.	**12**	

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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

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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 should include the following, but all valid material must be credited. • examples of standardised components • an evaluation of the impact standardised components have had on the development of specific products • a discussion of the impact the use of standardised components have had on the wider issues in design and technology (including cultural, economic, environmental and social factors). Examples of standardised components include, nails, KD fittings, machine screws, nuts and bolts, electronic components, springs, double-sided tape, paper clips... Examples of the impact can be: Positive – easily accessible components, components which are known to be an exact/specific size, saves time for furniture manufacturer from having to make complex components like hinges. Negative – transference of profit for those products to a different manufacturer of the component, transport costs as they are often made around the world. The answer must be structured in paragraphs with whole sentences.	**12**	

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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

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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

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