CAMBRIDGE
International Education

Cambridge International AS & A Level

DESIGN AND TECHNOLOGY **9705/32**

Paper 3 A 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(s) awarded
	Benefit of doubt given – mark(s) awarded
Highlighter	Creditworthy response – highlight key points
	Repetition
	Marking level achieved
	Marking level achieved
	Marking level achieved
	Marking level achieved
	Marking level achieved
	Marking level achieved
	Page or response seen by examiner

Question	Answer	Marks	Guidance
1(a)	**State a suitable material for the tile holder shown in Fig. 1.1. Give <u>two</u> reasons to justify your choice.** Award up to **one** mark for an appropriate material. Award up to **one** mark for **each** appropriate reason up to a maximum of **two** marks. The reasons must be relevant to the chosen material. Answers could be: Material: Beech Reasons: • Beech veneers can be laminated to form the shape • It is straight grained and can be routed to create profile • It is easy to bend into the required shape Material: Aluminium Reasons: • It is rigid to hold tiles securely • It is lightweight for ease of portability • It does not require a finish, saves cost Material: ABS Reasons: • It is tough and will not break easily • It is easy to bend using heat and formers • It is available in a range of colours	**3**	**Accept all valid responses.** Do not accept single word responses

Question	Answer	Marks	Guidance
1(b)	**Use sketches and notes to show how you would make one tile holder as shown in Fig. 1.1 in a school workshop. In your response, you should give details of any tools and equipment you would use.** This question has a total of 9 marks. Instructions on how to mark this question follow on further pages. Knowledge and Understanding = **3** marks Application = **4** marks Communication = **2** marks To award full marks, answers must: • include the manufacturing method for all parts of the tile holder • identify the correct tools and equipment. Full details of CAD drawing and set up are required for 3D printing answers. Responses may include some of the following ideas, but all valid material must be credited.	**9**	

Question	Answer	Marks	Guidance
1(b)	Methods of making the tile holder could be: • Prepare formers for lamination • Glue thin strips together to required thickness, protect strips when placing between formers • Cramp together until set – remove • Finish with glasspaper, apply surface finish • Cut aluminium strip of correct section to length (taking into account extra for bending) • Set folding bars to angle for first bend or use appropriate formers to create bends • Bend and repeat for other two bends • Ensure no sharp edges, finish with appropriate abrasives, polish • Cut ABS strip of correct section to length (taking into account extra for bending) • Use strip heater and formers to bend to shape • Use line bender/strip heater and appropriate/s former to accurately bend to shape • Use appropriate abrasive to finish, polish faces and edges Accept all valid responses. **To mark this question:** **First**, award up to a maximum of **three** marks using the marking grid for AO1a Knowledge and understanding.		

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>1(b)</td><td>
Marking grid for AO1a Knowledge and understanding

Candidates should be able to:
• Demonstrate knowledge and understanding of a range of materials, tools, equipment and components used in design and technological activity. (AO1a)

<table>
<tr><th>Level</th><th>Description</th><th>Marks</th></tr>
<tr><td>Level 2</td><td>Clear and detailed knowledge and understanding of an appropriate range of tools and equipment. (AO1a)</td><td>2–3</td></tr>
<tr><td>Level 1</td><td>Partial knowledge and understanding of an appropriate range of tools and equipment. (AO1a)</td><td>1</td></tr>
<tr><td>Level 0</td><td>No creditable response.</td><td>0</td></tr>
</table>

Second, award up to a maximum of four marks using the marking grid for AO2a Application of knowledge and understanding.
</td><td></td><td></td></tr>
</table>

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>1(b)</td><td>
Marking grid for AO2a Application of knowledge and understanding

Candidates should be able to:
• Apply knowledge, understanding and skills in a variety of contexts. (AO2a)

<table>
<tr><th>Level</th><th>Description</th><th>Marks</th></tr>
<tr><td>Level 2</td><td>Clear and detailed application of knowledge and understanding of an appropriate range of tools and equipment for the product. (AO2a)</td><td>3–4</td></tr>
<tr><td>Level 1</td><td>Partial application of knowledge and understanding of an appropriate range of tools and equipment for the product. (AO2a)</td><td>1–2</td></tr>
<tr><td>Level 0</td><td>No creditable response.</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>1(b)</td><td>
Third, award up to a maximum of two marks using the marking grid for AO2b Communication using sketches and notes.

Marking grid for AO2b Communication using sketches and notes

Candidates should be able to:
• Communicate knowledge and understanding using sketches, notes and a range of graphical techniques, including conventions and specialist vocabulary. (AO2b)

<table>
<tr><th>Level</th><th>Description</th><th>Marks</th></tr>
<tr><td>Level 2</td><td>Clear and easily understood. (AO2b)</td><td>2</td></tr>
<tr><td>Level 1</td><td>Partial communication. (AO2b)</td><td>1</td></tr>
<tr><td>Level 0</td><td>No creditable response.</td><td>0</td></tr>
</table>
</td><td></td><td></td></tr>
</table>

Question	Answer	Marks	Guidance
1(c)	**Use sketches and notes to describe the changes which may be necessary to the design, manufacturing method and the material selected to produce 10 000 identical tile holders.** This question has a total of 8 marks. Instructions on how to mark this question follow on further pages. Materials/design and manufacturing = (2+2) = **4** marks Communication = **4** marks **To mark this question:** Give a total of up to **four** marks by: **First**, awarding up to a maximum of **two** marks for the materials and appropriate changes to the design. Answers could include: <u>Materials/design</u> • Explanation of no change • Nylon • ABS • Appropriate hardwood • Appropriate change to design **Second**, awarding up to a maximum of **two** marks for the manufacturing method. Answers could include: <u>Manufacturing method</u> • Use of jigs • templates • formers • extrusion • injection moulding • appropriate high volume production method	**8**	**Accept all valid responses**

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>1(c)</td><td>
Third, award up to a maximum of four marks using the marking grid for AO2b Communication using sketches and notes.

Marking grid for AO2b Communication using sketches and notes

Candidates should be able to:
• Communicate knowledge and understanding using sketches, notes and a range of graphical techniques, including conventions and specialist vocabulary. (AO2b)

<table>
<tr><th>Level</th><th>Description</th><th>Marks</th></tr>
<tr><td>Level 2</td><td>• The sketches are detailed and are successfully communicated with precision and clarity. (AO2b)
• The sketches have detailed and correct annotations, including where relevant appropriate conventions and specialist vocabulary. (AO2b)</td><td>3–4</td></tr>
<tr><td>Level 1</td><td>• Partial communication through simple sketches. (AO2b)
• The sketches have limited annotations, with limited conventions and specialist vocabulary. (AO2b)</td><td>1–2</td></tr>
<tr><td>Level 0</td><td>No creditable response.</td><td>0</td></tr>
</table>
</td><td></td><td></td></tr>
</table>

Question	Answer	Marks	Guidance
2(a)	**Explain <u>one</u> benefit of using 3D printing when modelling ideas.** Award up to **one** mark for an appropriate benefit. Award up to **one** mark for a relevant explanation of the benefit. Answers could be: • 3D printing can produce complex one-piece [1] and accurate models, quick to manipulate and view [1] • 3D printing can produce models very quickly [1] saving time in getting product to realisation [1] • Limited waste is produced [1] more sustainable [1] • 3D printing is very flexible [1] in creating a wide range of models within space confines [1]	**2**	**Accept all valid responses.**

Question	Answer	Marks	Guidance
2(b)	**Describe two ways in which dimensional checks are used when manufacturing products.** Award up to **two** marks for each relevant way. Award up to **one** additional mark for an appropriate explanation of **each** way. Any **two** ways from: • Go/no-go gauge [1] can check if a product or component part is in tolerance [1] • Digital cameras/optical comparators [1] can check dimensional deviation of products or components at an extremely rapid rate [1] • Using tools for direct measurement [1] using tools including vernier calipers or micrometers [1] • Laser scanners [1] a type of non-contact measurement method where the reflection of a laser point or line is used to measure the distance to the surface of an object. [1]	**4**	**Accept all valid responses.**

Question	Answer	Marks	Guidance
2(c)	**Use sketches and notes to show the process of press forming.** This question has a total of 4 marks. Instructions on how to mark this question follow below. Process = **2** marks Communication = **2** marks **To mark this question:** **First**, award up to **one** mark for detail of press tool and force applied. **Second**, award up to **one** mark for positioning of former Answers could include: • press tool uses applies and guides a pressing force to a material to deform it by bending or stretching • shape will take the shape of the former **Third**, award up to **two** marks for the quality of the communication using the marking grid for AO2b Communication using sketches and notes.	**4**	

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>2(c)</td><td>
Marking grid for AO2b Communication using sketches and notes

Candidates should be able to:
• Communicate knowledge and understanding using sketches, notes and a range of graphical techniques, including conventions and specialist vocabulary. (AO2b)

<table>
<tr><th>Level</th><th>Description</th><th>Marks</th></tr>
<tr><td>Level 2</td><td>Clear and easily understood, showing force applied and indentation shape. (AO2b)</td><td>2</td></tr>
<tr><td>Level 1</td><td>Partial communication. (AO2b)</td><td>1</td></tr>
<tr><td>Level 0</td><td>No creditable response.</td><td>0</td></tr>
</table>
</td><td></td><td></td></tr>
</table>

Question	Answer	Marks	Guidance
3(a)	**Explain what is meant by the term demographics with reference to business and commercial practices.** Award up to **one** mark for the understanding of demographics Award up to a maximum of **two** additional marks for an appropriate explanation. Exemplar answers: • Demographics refers to the statistical study of human beings [1] generally the socio-economic status with reference to business and commercial practices [1] • Knowledge of the socio-economic background from demographic information [1] to help identify possible product preferences of customers [1] • Purchasing behaviours, understand who buys a company's products and services, who the brand appeals to [1] can also be identified for age groups from the demographic information.[1] • Demographics can also identify other distinct characteristics of an area [1] such as gender, age, income, to focus advertising.[1]	**3**	**Accept all valid responses.**

Question	Answer	Marks	Guidance
3(b)	**Explain <u>one</u> disadvantage to a company of using discounting as a product extension strategy.** Award up to **one** mark for the identification of a valid disadvantage. Award up to a maximum of **two** additional marks for an appropriate explanation. Answers could include: • There can be risk of the weakening of a company's reputation [1]. Customers may become wary of reasons for the need for discounts [1] • Customers may get used to the strategy [1] and wait for further discounts before purchasing products [1] • The strategy may create a price war with competitors [1] leading to possible further losses.[1]	**3**	**Accept all valid responses.**
3(c)	**Explain <u>two</u> ways, other than discounting, a company can create more demand for a product.** Award up to **two** marks for each relevant way. Award up to **one** additional mark for an appropriate explanation of **each** way Any **two** ways from: • Identify the correct target market [1] to focus advertising and increase demand [1] • Apply appropriate marketing strategy [1] to excite and stimulate demand [1] • Could make product more exclusive [1] e g. add more features / innovations [1] • Consider/research the most effective advertising media, make use of social media - influencers / celebrities [1] for the selected target market. [1]	**4**	**Accept all valid responses.**

Question	Answer	Marks	Guidance
4(a)	**Explain <u>one</u> benefit of a just in time (JIT) manufacturing system.** Award up to **one** mark for an appropriate benefit. Award up to **one** mark for a relevant explanation of the benefit. Exemplar answers: • JIT reduces waste [1] and increases efficiency by receiving commodities just when they are needed for manufacturing rather than in advance [1] • Cost reduction [1] receiving supplies on an as-needed basis saves money and reduces operational costs. [1] • JIT system reduces all expenses incurred [1] by unsold items, such as depreciation and warehousing charges [1] • Increased efficiency and productivity [1] companies know that supplies will arrive at the exact time they are needed for manufacturing, lead time can be greatly reduced. [1]	**2**	**Accept all valid responses.**

Question	Answer	Marks	Guidance
4(b)	**Discuss the disadvantages of implementing an automated manufacturing system for the company.** Use the marking grid for AO4d Analysis of the wider issues in design and technology to mark candidates' responses to this question. Responses may include some of the following ideas, but all valid material must be credited. • Automated production systems are expensive to set up • A high level of maintenance is required • Automated production requires fewer workers. Not helpful in areas requiring employment • Automated machinery/equipment should be future proof otherwise may become redundant • Automation has reduced flexibility in production • Automation requires skilled technicians/IT specialists to set up equipment and maintain it. Not always available or easy to replace and require high wages Other issues could make reference to quality control, speed of production, reduced errors. **Marking grid for AO4d Analysis of wider issues in design and technology** Candidates should be able to: • Analyse wider issues in design and technology (including cultural, economic, environmental and social factors). (AO4d)	**6**	

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>4(b)</td><td>
<table>
<tr><th>Level</th><th>Description</th><th>Marks</th></tr>
<tr><td>Level 3</td><td>Analysis of more than two wider issues with relevant and detailed information
• Detailed discussion of more than two wider issues in design and technology. (AO4d)
• The analysis is well supported with relevant and detailed information. (AO4d)</td><td>5–6</td></tr>
<tr><td>Level 2</td><td>Analysis of at least two wider issues with relevant information
• Discussion of at least two wider issues in design and technology. (AO4d)
• The analysis is supported with relevant information. (AO4d)</td><td>3–4</td></tr>
<tr><td>Level 1</td><td>Description of at least one wider issue with limited relevant information
• Description of at least one wider issue in design and technology. (AO4d)
• The description is supported with limited relevant information. (AO4d)</td><td>1–2</td></tr>
<tr><td>Level 0</td><td>• No creditable response.</td><td>0</td></tr>
</table>
</td><td></td><td></td></tr>
</table>

Question	Answer	Marks	Guidance
4(c)	**Explain <u>one</u> strategy that could be used to evaluate the effectiveness of a manufacturing system.** Award up to **one** mark for an appropriate strategy Award up to **one** mark for a relevant explanation of the strategy Exemplar answers: • On a basic level detail of the rate of sales and profits [1] can give an indication that the manufacturing system is working well [1] • In-house or bought-in inspection of system [1] can give an indication of effectiveness in comparison with competitors [1] • Maintaining accurate, real-time production visibility [1] will ensure product quality and customer satisfaction while keeping down manufacturing costs [1]	**2**	**Accept all valid responses.**

Question	Answer	Marks	Guidance
5(a)	**Describe <u>one</u> process that can be used to enhance the property of a metal.** Award up to **one** mark for an appropriate process Award up to **one** additional mark for an appropriate description of the process Exemplar answers: • work hardening [1] will increase in hardness of a metal by hammering, rolling, drawing, or other physical process. [1] • annealing [1] the process that alters the physical properties of metal to make it less hard and more malleable [1] • case hardening [1] is the process of hardening the surface of a metal by infusing elements into the material's surface, forming a thin layer of harder alloy.[1] • hardening [1] involves heating metal to a high temperature and then quenching it in oil or water [1] • tempering [1] involves heating a metal to a lower temperature and then cooling it at a desired rate. [1] • anodising [1] an electrolytic process for producing thick oxide coatings, usually on aluminium and its alloys. [1] • galvanising [1] is the process of applying a protective zinc coating to iron or steel, to prevent rusting. [1]	**2**	**Accept all valid responses.** Aesthetics must be related to a physical property.

Question	Answer	Marks	Guidance
5(b)	**Explain <u>one</u> disadvantage of applying a finish to a material.** Award up to **one** mark for an appropriate disadvantage Award up to **one** mark for a relevant explanation of the disadvantage Exemplar answers: • Finish may need regular refresh [1] takes time, care and effort [1] • Customer preference [1] they may wish to provide their own finish [1] • Some finishes fade or dull over time [1] leaving unattractive appearance [1]	**2**	**Accept all valid responses.**

Question	Answer	Marks	Guidance
5(c)	**Discuss the importance to manufacturers and consumers of using standard components when manufacturing products.** Use the marking grid for AO4d Analysis of the wider issues in design and technology to mark candidates' responses to this question. Responses may include some of the following ideas, but all valid material must be credited. • Standard components are usually manufactured to a recognized standard. Quality is reliable and guaranteed • They are manufactured in large numbers and can be replenished as and when required. Cost reduction from high quantity production. • Home repairs and maintenance are possible in some cases where standard components are used • No requirement for additional machinery or workforce to produce components, cost benefits and space reduction. **Marking grid for AO4d Analysis of wider issues in design and technology** Candidates should be able to: • Analyse wider issues in design and technology (including cultural, economic, environmental, and social factors). (AO4d)	**6**	

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>5(c)</td><td>
<table>
<tr><th>Level</th><th>Description</th><th>Marks</th></tr>
<tr><td>Level 3</td><td>Analysis of more than two wider issues with relevant and detailed information
• Detailed discussion of more than two wider issues in design and technology. (AO4d)
• The analysis is well supported with relevant and detailed information. (AO4d)</td><td>5–6</td></tr>
<tr><td>Level 2</td><td>Analysis of at least two wider issues with relevant information
• Discussion of at least two wider issues in design and technology. (AO4d)
• The analysis is supported with relevant information. (AO4d)</td><td>3–4</td></tr>
<tr><td>Level 1</td><td>Description of at least one wider issue with limited relevant information
• Description of at least one wider issue in design and technology. (AO4d)
• The description is supported with limited relevant information. (AO4d)</td><td>1–2</td></tr>
<tr><td>Level 0</td><td>• No creditable response.</td><td>0</td></tr>
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Question	Answer	Marks	Guidance
6(a)	**Use sketches and notes to produce <u>two</u> different innovative ideas for the storage unit for gaming equipment.** This question has a total of 12 marks. Instructions on how to mark this question follow on further pages. Communication = **2** marks Generate = **4** marks **(i)** Idea 1 = 2+4 marks (**6** marks in total) **(ii)** Idea 2 = 2+4 marks (**6** marks in total) **To mark this question:** For **each** innovative idea, part (i) and part (ii) • **First**, award up to **two** marks using the marking grid for AO2b Communication using sketches and notes. • **Second**, award up to **four** marks using the marking grid for AO3c Generate conceptual ideas. • The two ideas must be different from each other. The design ideas may include some of the following ideas, but all valid material must be credited. • Could be free-standing or wall/door hanging • Could include other features • Could be styled to particular game theme • Allow extension for increased equipment • Innovative securing of gaming components	**12**	

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>6(a)</td><td>
Marking grid for AO2b Communication using sketches and notes

Candidates should be able to:
• Communicate knowledge and understanding using sketches, notes and a range of graphical techniques, including conventions and specialist vocabulary. (AO2b)

<table>
<tr><th>Level</th><th>Description</th><th>Marks</th></tr>
<tr><td>Level 2</td><td>Clear and easily understood. (AO2b)</td><td>2</td></tr>
<tr><td>Level 1</td><td>Partial communication. (AO2b)</td><td>1</td></tr>
<tr><td>Level 0</td><td>No creditable response.</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>6(a)</td><td>

Marking grid for AO3c Generate conceptual ideas

Candidates should be able to:
- Generate conceptual ideas and evaluate them, leading to the creation of a design proposal. (AO3c)

<table>
<tr><th>Level</th><th>Description</th><th>Marks</th></tr>
<tr><td>Level 3</td><td>• Generates one complete valid conceptual idea. The conceptual idea is fully supported. (AO3c)
• Clear reference to design specification. (AO3c)</td><td>4</td></tr>
<tr><td>Level 2</td><td>• Generates one complete conceptual idea. The conceptual idea has some supporting information. (AO3c)
• Some reference to design specification. (AO3c)</td><td>2–3</td></tr>
<tr><td>Level 1</td><td>• Generates one partially complete conceptual idea. The conceptual idea has limited supporting information. (AO3c)
• Limited or no reference to design specification. (AO3c)</td><td>1</td></tr>
<tr><td>Level 0</td><td>• No creditable response.</td><td>0</td></tr>
</table>

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</table>

Question	Answer	Marks	Guidance
6(b)	**Evaluate your <u>two</u> ideas for the storage unit to select a final proposal for development. Justify your selection.** Award up to **one** mark for the decision with justification. Award up to **one** mark for the comparison of the two design ideas. Award up to **one** mark for the evaluation. Accept an answer which includes sketches and annotations as necessary. • A clear justification of the choice with an explanation • Clear comparisons should be made • Evaluations should consider the specification points given in the question • Sketches and notes may be used to support evaluations Candidates can answer this question in a variety of ways.	**3**	**Accept all valid responses.**

Question	Answer	Marks	Guidance
6(c)	**Use sketches and notes to develop your chosen idea to show details of functions, materials, construction and finishes.** This question has a total of 10 marks. Instructions on how to mark this question follow on further pages. Functions, materials, construction and finishes = **8** marks Communication = **2** marks **To mark this question:** **First**, give a total of up to **eight** marks by using the following: <u>Functions</u> Award up to a maximum of **three** marks: • Award **one** mark for one key function described. • Award **two** marks for two key functions described. • Award **three** marks for more than two functions described. <u>Materials</u> Award up to a maximum of **two** marks: • Award **one** mark for naming one or more relevant material. • Award **one** mark for the justification of use of the material. <u>Construction</u> Award up to a maximum of **two** marks: • Award **one** mark for some detail of construction/assembly. • Award **two** marks for clear detail of construction/assembly.	**10**	

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>6(c)</td><td>
<u>Finishes</u>
Award one mark for an appropriate finish.

Second, award up to two marks using the marking grid for AO2b Communication using sketches and notes.

Marking grid for AO2b Communication using sketches and notes

Candidates should be able to:
• Communicate knowledge and understanding using sketches, notes and a range of graphical techniques, including conventions and specialist vocabulary. (AO2b)
<table>
<tr><th>Level</th><th>Description</th><th>Marks</th></tr>
<tr><td>Level 2</td><td>Clear and detailed sketches and notes. (AO2b)</td><td>2</td></tr>
<tr><td>Level 1</td><td>Simple sketches with some notes included. (AO2b)</td><td>1</td></tr>
<tr><td>Level 0</td><td>No creditable response.</td><td>0</td></tr>
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</table>

Question	Answer	Marks	Guidance
6(d)	**Use a method of your own choice to draw the complete design solution.** **Include key details and dimensions.** This question has a total of 8 marks. Instructions on how to mark this question follow on further pages. Communication = **4** marks Finalise = **4** marks Candidates may use component drawings with an assembled product sketch. Pictorial/perspective sketches should include all details and dimensions. Annotation may be used to describe key features. Appropriate drawings could be dimensioned orthographically or isometrically. **To mark this question:** **First**, award up to a maximum of **four** marks using the marking grid for AO2b Communication using sketches and notes.	**8**	

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>6(d)</td><td>
Marking grid for AO2b Communication using sketches and notes

Candidates should be able to:
• Communicate knowledge and understanding using sketches, notes and a range of graphical techniques, including conventions and specialist vocabulary. (AO2b)

<table>
<tr><th>Level</th><th>Description</th><th>Marks</th></tr>
<tr><td>Level 2</td><td>Clear and detailed sketches with most key dimensions included. (AO2b)</td><td>3–4</td></tr>
<tr><td>Level 1</td><td>Simple sketches with some dimensions included. (AO2b)</td><td>1–2</td></tr>
<tr><td>Level 0</td><td>No creditable response.</td><td>0</td></tr>
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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>6(d)</td><td>
Second, award up to a maximum of four marks using the marking grid for AO3d Finalise a design proposal.

Marking grid for AO3d Finalise a design proposal

Candidates should be able to:
• Refine and develop procedures to finalise a design proposal, recognising the constraints of time, cost and resources, and plan for making. (AO3d)

<table>
<tr><th>Level</th><th>Description</th><th>Marks</th></tr>
<tr><td>Level 2</td><td>The design proposal is realistic and includes most design/product details. (AO3d)</td><td>3–4</td></tr>
<tr><td>Level 1</td><td>The design proposal includes some design/product details. (AO3d)</td><td>1–2</td></tr>
<tr><td>Level 0</td><td>No creditable response.</td><td>0</td></tr>
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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>6(e)</td><td>
Write a detailed <u>manufacturing</u> specification for your chosen idea. Your answer should include at least <u>four</u> different manufacturing specification points.

Award marks based on the following criteria.

<table>
<tr><th>Level</th><th>Description</th><th>Marks</th></tr>
<tr><td>5</td><td>Four or more detailed manufacturing specification points covered and clearly described.</td><td>5</td></tr>
<tr><td>4</td><td>Three points covered and clearly described. Four or more detailed manufacturing specification points covered and not clearly described.</td><td>4</td></tr>
<tr><td>3</td><td>Two points covered and clearly described. Three points covered and not clearly described.</td><td>3</td></tr>
<tr><td>2</td><td>One point covered and clearly described. Two points covered not clearly described.</td><td>2</td></tr>
<tr><td>1</td><td>One point covered but not clearly described.</td><td>1</td></tr>
<tr><td>0</td><td>No creditable response.</td><td>0</td></tr>
</table>

The manufacturing specification could include the following, but all valid material must be credited:
</td><td>5</td><td></td></tr>
</table>

Question	Answer	Marks	Guidance
6(e)	Specific materials used: • Appropriate for storage unit Bought in components/parts: • Appropriate for storage unit Construction/assembly details: • Appropriate for storage unit Finish to be applied: • Appropriate for storage unit Allowable tolerance: • Appropriate for storage unit		
6(f)	**Explain one benefit of designing the storage unit to be assembled by a consumer.** Award up to **one** mark for the appropriate benefit. Award up to **one** mark for a relevant explanation of the benefit. Any **one** benefit from: • Feeling of personal ownership [1], from assembling/finishing product [1] • Ease of storage [1] reduce space required by retailer/transport [1] • Customer transport [1] smaller so easier to take home [1] • Reduce cost [1] no assembly by manufacturer [1]	**2**	**Accept all valid responses.**