Cambridge Assessment International Education

Cambridge International AS & A Level

DESIGN AND TECHNOLOGY **9705/11**

Paper 1 **October/November 2020**

MARK SCHEME

Maximum Mark: 120

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 2020 series for most Cambridge IGCSE™, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

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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 descriptors 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.

Section A

Question	Answer	Marks	Guidance
1(a)	Cardboard, Polypropylene **0–2**	**2**	Accept other correct materials
1(b)(i)	Appropriate method of making photo frame **0–3**	**3**	Measure, mark, cut out, scored, folded, slot cut and tabs folded Accept CAM
	Details of appropriate tools, equipment and safety precautions **0–3**	**3**	Ruler, pencil, craft knife, scoring tool Safety mat, safety ruler, care with sharp blades Limited tools/equipment 1 mark Good tools/equipment 2 marks Good tools/equipment and safety precautions 3 marks
1(b)(ii)	Appropriate method for marking out, cutting out and assembling folder **0–3**	**3**	Stand designed to pop out of current frame Stand added to back NB must fold flat accept other correct responses
	Details of appropriate tools, equipment and safety precautions **0–3**	**3**	Ruler, pencil, craft knife, scoring tool Safety mat, safety ruler, care with sharp blades Limited tools/equipment 1 mark Good tools/equipment 2 marks Good tools/equipment and safety precautions 3 marks

Question	Answer		Marks	Guidance
1(b)(iii)	Appropriate explanation of effects of jigs and templates in making	**0–3**	**3**	Jigs/templates offer repeatability, speed and QC they can be used in the outer frame, stand, tab position and inner frame
	Details of appropriate tools, equipment and safety precautions	**0–3**	**3**	Limited tools/equipment 1 mark Good tools/equipment 2 marks Good tools/equipment and safety precautions 3 marks

Question	Answer		Marks	Guidance
2(a)(i)	Mild Steel, Aluminium, Thermo-plastic	**0–2**	**2**	Accept other correct materials
2(b)(i)	Appropriate method of making part A and attaching to part B	**0–3**	**3**	Metal, wood, plastic shaping or moulding technique. threaded, glued, interference fit?
	Details of appropriate tools, equipment and safety precautions	**0–3**	**3**	Pencil, scriber, ruler, sander, drill Eye protection, hair tied back, fingers clear, work clamped Limited tools/equipment 1 mark Good tools/equipment 2 marks Good tools/equipment and safety precautions 3 marks
2(b)(ii)	Appropriate changes to the shape of Part A	**0–3**	**3**	Shape changed to fit the hand comfortably
	Details of appropriate tools, equipment and safety precautions	**0–3**	**3**	Hand tools or mould changed to allow improve comfort, grip etc. Eye protection, hair tied back, fingers clear, work clamped Limited tools/equipment 1 mark Good tools/equipment 2 marks Good tools/equipment and safety precautions 3 marks

Question	Answer	Marks	Guidance
2(c)	Appropriate issues identified **0–3**	**3**	Suitable for batch production, repeatability, accuracy, colour change, shape
	Clear and appropriate explanations of why issues/points are considered relevant **0–3**	**3**	Limited detail 1 mark Good detail 2 marks Fully detailed 3 marks

Question	Answer	Marks	Guidance
3(a)(i)	Appropriate materials **0–1**	**1**	Aluminium, mild steel, stainless steel,
	Appropriate reason **0–1**	**1**	Weight, strength, corrosion resistance (if coated in case of Mild steel)
3(b)(i)	Appropriate method of forming part B described **0–3**	**3**	Hand techniques use of jigs and heat
	Details of appropriate tools, equipment and safety precautions **0–3**	**3**	Cutting, forming, filing and finishing Eye protection, hair tied back, fingers clear, work clamped, care with heat Limited tools/equipment 1 mark Good tools/equipment 2 marks Good tools/equipment and safety precautions 3 marks
3(b)(ii)	Appropriate method of joining part B to part A described **0–3**	**3**	Jig for fixing would be very useful in terms of accuracy, welding, brazing
	Details of appropriate tools, equipment and safety precautions **0–3**	**3**	Clamping, MIG, QC Eye protection, hair tied back, fingers clear, work clamped, care with heat Limited tools/equipment 1 mark Good tools/equipment 2 marks Good tools/equipment and safety precautions 3 marks

Question	Answer	Marks	Guidance
3(b)(iii)	Appropriate method of making stand modular **0–3**	**3**	Extra bracket to join stands together Reduce tube on one end so that it slots into larger tube Telescopic connection tubes with spring loaded ball bearings
	Details of appropriate tools, equipment and safety precautions **0–3**	**3**	QC, Lathe, smaller tubes cut, brackets made, filed Eye protection, hair tied back, fingers clear, work clamped, care with heat Limited tools/equipment 1 mark Good tools/equipment 2 marks Good tools/equipment and safety precautions 3 marks

Section B

Question	Answer	Marks	Guidance
4(a)	Function of part X explained **0–2**	**2**	Answer must be justified Access for letters/newspapers/magazines
4(b)	Problem one identified and described **0–2**	**2**	No door to retrieve mail/magazine
	Problem two identified and described **0–2**	**2**	Mesh on top will allow water to access box Very small opening for letters to be pushed through. Not easily identified as a letter box
4(c)	Explanation of how problem one could be overcome **0–3**	**3**	Add access door Add a solid roof – shaped to allow rain to run off
	Explanation of how problem two could be overcome **0–3**	**3**	Increase size of letter access slot
4(d)	Situation has been analysed and relevant issues/points identified **0–3**	**3**	Easily obtainable, non-corroding, easy to form Easily recycled in readiness for secondary life
	Clear and appropriate explanations of why issues/points are considered relevant **0–3**	**3**	Low melting point
	Specific examples/evidence used to support conclusions **0–2**	**2**	Aluminium soft drinks cans

Question	Answer	Marks	Guidance
5(a)	Function of part X explained **0–2**	**2**	Closing tab offers a secure fixing Other realistic answer Answer must be justified
5(b)	Problem one identified and described **0–2**	**2**	No slot for opening tab to mate with
	Problem two identified and described **0–2**	**2**	No tabs on sides, thus roof would not be very strong No glue tabs on base of box No exterior detail on the house
5(c)	Explanation of how problem one could be overcome **0–3**	**3**	Add glue tabs
	Explanation of how problem two could be overcome **0–3**	**3**	Add slot to net Add tabs to base Add exterior detail
5(d)	Situation has been analysed and relevant issues/points identified **0–3**	**3**	Ease of manufacture
	Clear and appropriate explanations of why issues/points are considered relevant **0–3**	**3**	Economic transportation, packaging and protection in transit
	Specific examples/evidence used to support conclusions **0–2**	**2**	Ease of assembly/QC

Question	Answer	Marks	Guidance
6(a)	Function of part X explained **0–2**	**2**	Heater to soften the plastic in readiness to be formed Answer must be justified
6(b)	Problem one identified and described **0–2**	**2**	No toggle clamps No lifting arm for platform
	Problem two identified and described **0–2**	**2**	No control panel, vac pump switch or air holes in bed
6(c)	Explanation of how problem one could be overcome **0–3**	**3**	Add frame Add clamps
	Explanation of how problem two could be overcome **0–3**	**3**	Add lifting arm
6(d)	Situation has been analysed and relevant issues/points identified **0–3**	**3**	Stability, ease of machining, economic, heat resistance/thermal prop, hardwearing Accept other correct properties
	Clear and appropriate explanations of why issues/points are considered relevant **0–3**	**3**	
	Specific examples/evidence used to support conclusions **0–2**	**2**	

Section C

Question	Answer	Marks	Guidance
7(a)	One pre-conceived idea presented **0–4**	**20**	
	OR The development and selection of a range of ideas into a single design proposal which would appear to work but lacks some technical detail **5–8**		
	OR The development and selection of a range of ideas into a single design proposal which would appear to technical detail to show that the proposed solution would clearly work **9–12**		
	Clarity and quality of sketching and explanatory notes **0–4**		
	Evaluation (reasons for selection) **0–4**		
7(b)	As for part (a)	**20**	
7(c)	As for part (a)	**20**	

Question	Answer	Marks	Guidance
7(d)	The drawing will exhibit a reasonable standard of outcome and show some of the required design features **0–5**	**20**	
	OR The drawing will exhibit a good standard of outcome and show most of the design features required to make the product function as intended **6–9**		
	OR The drawing will be completed to a high standard of outcome and fully show the design features required To make the product function as intended **10–14**		
	Some use made of colour and tone to enhance the visual impact of the drawing **0–2**		
	OR Good use has been made of colour and tone to enhance the visual impact of the drawing **3–4**		
	OR Very good use has been made of colour, tone and material representation to enhance the visual impact of the drawing **5–6**		

Question	Answer	Marks	
8	as for **Question 7**	**20**	

Question	Answer	Marks	
9	as for **Question 7**	**20**	