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**DESIGN AND TECHNOLOGY**

**9705/12**

Paper 1

**October/November 2017**

MARK SCHEME

Maximum Mark: 120

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**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.

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This document consists of **6** printed pages.

**Section A**

Question	Answer	Marks
1(a)	Each appropriate reason 1 mark, e.g.: <ul style="list-style-type: none"> <li>• fairly low melting point,</li> <li>• Easy to cast,</li> <li>• Cuts and machines easily</li> <li>• Can be polished to a bright finish</li> </ul>	(0–2) <b>2</b>
1(b)(i)	Appropriate process for making the pattern described Details of appropriate tools, equipment and safety precautions	(0–3) (0–3) <b>6</b>
1(b)(ii)	Appropriate casting method described Details of appropriate tools, equipment and safety precautions	(0–3) (0–3) <b>6</b>
1(b)(iii)	Appropriate threading process described Details of appropriate tools, equipment and safety precautions, e.g.: <ul style="list-style-type: none"> <li>• Mark out position, centre punch, Drill hole (size?), Taps, Wrench</li> </ul>	(0–3) (0–3) <b>6</b>

Question	Answer	Marks
2(a)	Use of a sketch and notes to explain how 4 A5 cards could be printed on an A3 sheet	(0–2) <b>2</b>
2(b)(i)	Appropriate illustration method described and some details of equipment given e.g. hand drawn or computer generated Appropriate printing method described and some details of equipment given e.g. computer printer or photocopier	(0–3) (0–3) <b>6</b>
2(b)(ii)	Use of appropriate tools to cut slots described, e.g.: <ul style="list-style-type: none"> <li>• Compass cutters, laser cutter etc.</li> </ul>	(0–2) <b>2</b>
2(b)(iii)	Appropriate methods used to make and attach ears with some details of equipment given: <ul style="list-style-type: none"> <li>• Template</li> </ul>	(0–4) <b>4</b>
2(b)(iv)	Appropriate methods used to make and attach the mechanism Details of appropriate tools, equipment and safety precautions <ul style="list-style-type: none"> <li>• Measure, cut, parallel, holes, split pins</li> </ul>	(0–3) (0–3) <b>6</b>

Question	Answer	Marks
3(a)	Correct dimension for X 31 mm 1 mark Correct dimension for Y 16 mm 1 mark (Allow 30 mm and 15 mm). (0–2)	<b>2</b>
3(b)(i)	Appropriate method of making part <b>A</b> described (0–3) Details of appropriate tools, equipment and safety precautions (0–3) • Measure, cut, file, mark, drill, sand Note: • If lathe has been used for the <b>method</b> – max 2 marks, • If lathe method has been well described with <b>appropriate tools</b> etc., 3 marks can be given	<b>6</b>
3(b)(ii)	Appropriate method of making parts <b>B</b> described (0–3) Details of appropriate tools, equipment and safety precautions (0–3) • Measure, cut, chisel/route, file, sand	<b>6</b>
3(b)(iii)	Appropriate method of making parts <b>C</b> described (0–3) Details of appropriate tools, equipment and safety precautions (0–3) • Measure, cut, chisel/mortise, file, sand • Could use drill and then coping saw	<b>6</b>

**Section B**

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
4(a)	Part of the extraction system for removing the dust from the disc sander (0–2) Note: Must include extraction to access full marks.	<b>2</b>
4(b)	Problem one identified and described (0–2) Problem two identified and described (0–2) e.g. There is no where to rest work when it is being sanded metal is poured in the mould Direction of disc rotation will cause work to be lifted up when Being sanded Size and position of switches; normally recessed	<b>4</b>
4(c)	Explanation of how problem one could be overcome (0–3) Explanation of how problem two could be overcome (0–3) e.g. Adding a suitable table to rest work when being sanded Change guard from left to right hand side of disc Change direction of rotating disc (explanation of how this could be Needs to be given to gain full marks) Give credit for part C for position of guard change	<b>6</b>
4(d)(i)	Situation has been analysed and relevant issues/points identified (0–3)	<b>3</b>
4(d)(ii)	Clear and appropriate explanations of why issues/points are considered relevant (0–3)	<b>3</b>
4(d)(iii)	Specific examples/evidence used to support conclusions (0–2) Max 6 marks if no examples are given	<b>2</b>

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
5(a)	Allow finger to be inserted to make removal of bottle easier (0–2)	<b>2</b>
5(b)	Problem one identified and described (0–2) Problem two identified and described (0–2) e.g. No glue tabs on corners of insert, sides would fold in when the insert was pushed in or out of the sleeve The 'hole' would not be large enough for the bottle to fit in No tolerance in the size No base, the bottle could fall out when opened	<b>4</b>
5(c)	Explanation of how problem one could be overcome (0–3) Explanation of how problem two could be overcome (0–3) e.g. Four appropriate glue tabs added Sizes altered so that the bottle fits	<b>6</b>
5(d)(i)	Situation has been analysed and relevant issues/points identified (0–3)	<b>3</b>
5(d)(ii)	Clear and appropriate explanations of why issues/points are considered relevant (0–3)	<b>3</b>
5(d)(iii)	Specific examples/evidence used to support conclusions (0–2)	<b>2</b>

Question	Answer	Marks
6(a)	Allows rain water to quickly drain away. (0–2) <ul style="list-style-type: none"> <li>• Lighter for transport,</li> <li>• Aesthetic value</li> <li>• Stops the product rusting</li> </ul>	<b>2</b>
6(b)	Problem one identified and described (0–2) Problem two identified and described (0–2) e.g. No space for a wheelchair to fit because of four seats Table is not high enough and supporting framework is too narrow Note: Give 1 mark if candidate insinuates the user can be lifted into the seat	<b>4</b>
6(c)	Explanation of how problem one could be overcome (0–3) Explanation of how problem two could be overcome (0–3) e.g. Design altered by removing a seat Top of the table is raised and made longer so wheelchair can partly go under table or design of framework is altered to accommodate a wheelchair	<b>6</b>
6(d)(i)	Situation has been analysed and relevant issues/points identified (0–3)	<b>3</b>
6(d)(ii)	Clear and appropriate explanations of why issues/points are considered relevant (0–3)	<b>3</b>
6(d)(iii)	Specific examples/evidence used to support conclusions (0–2)	<b>2</b>

**Section C**

Question	Answer	Marks
7(a)	<p>One pre-conceived Idea presented (0–4)</p> <p><b>OR</b></p> <p>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)</p> <p><b>OR</b></p> <p>The development and selection of a range of Ideas into a single design proposal that Includes sufficient technical detail to show that the proposed solution would clearly work (9–12)</p>	<b>20</b>
	Clarity and quality of sketching and explanatory notes (0–4)	
	Evaluation (reasons for selection) (0–4)	
7(b)	As for part (a)	<b>20</b>
7(c)	As for part (a)	<b>20</b>
7(d)	<p>The drawing will exhibit a reasonable standard of outcome and show some of the required design features (0–5)</p> <p><b>OR</b></p> <p>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)</p> <p><b>OR</b></p> <p>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)</p>	<b>20</b>
	<p>Some use made of colour and tone to enhance the visual Impact of the drawing (0–2)</p> <p><b>OR</b></p> <p>Good use has been made of colour and tone to enhance the visual impact of the drawing (3–4)</p> <p><b>OR</b></p> <p>Very good use has been made of colour, tone and material representation to enhance the visual impact of the drawing (5–6)</p>	

**Questions 8 and 9 as for Question 7**