



**2008 Product Design**

**Intermediate 2**

**Finalised Marking Instructions**

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Q 1		
(a)	(i)	<ul style="list-style-type: none"> <li>• Lightweight</li> <li>• Durability</li> <li>• Strength issues</li> <li>• Aesthetic properties (must include aesthetic terms, shape etc)</li> <li>• Relatively inexpensive/cheap</li> <li>• Rigid</li> <li>• Can be coated (passivated) in variety of colours/materials/finishes</li> <li>• Easy to join</li> <li>• Any other suitable response</li> </ul> <p><i>Where the candidate has given more than two answers only the first two should be marked.</i></p> <p>Contradictory answers cancel each other out.</p> <p>1 mark per correct response up to total of 2 marks.</p>
	(ii)	<p>Method</p> <p>Injection moulding-process (moulding on its own scores 0)</p> <p>Reason</p> <ul style="list-style-type: none"> <li>• Suitable for mass production</li> <li>• Quick to make</li> <li>• Any colour</li> <li>• Uniformity of shape/quality/etc</li> <li>• Cheap/inexpensive</li> <li>• Moulds can be used repeatedly</li> <li>• Any other suitable response</li> </ul> <p>1 mark per correct response up to total of 1 mark for each part.</p>
	(iii)	<p>Reasons</p> <ul style="list-style-type: none"> <li>• Flat</li> <li>• Smooth</li> <li>• Available in large boards</li> <li>• Cheap/Inexpensive</li> <li>• Can be cut to any shape</li> <li>• Easy to machine</li> <li>• Uniform thickness</li> <li>• Strong</li> <li>• Durable</li> <li>• Readily available</li> <li>• Any other suitable response</li> </ul> <p><i>Where the candidate has given more than two answers only the first two should be marked.</i></p> <p>Environmental reasons <u>not</u> accepted</p> <p>1 mark per correct response up to total of 2 marks.</p>
	(iv)	<p>Method</p> <ul style="list-style-type: none"> <li>• Welding</li> <li>• Brazing (not adhesive)</li> <li>• Any suitable K-D fitting</li> <li>• Set screw/captive nut/etc</li> </ul> <p>Reason</p> <ul style="list-style-type: none"> <li>• Strong</li> <li>• Permanent/maintenance free</li> <li>• Demountable</li> <li>• Speed of process</li> <li>• Ease of process</li> <li>• Any other suitable response</li> </ul> <p><i>Reason must match method.</i></p> <p>1 mark per correct response up to total of 1 mark for each part.</p>

(b) (i)	<ul style="list-style-type: none"> <li>• Adjustable table height – waist/elbow height</li> <li>• Length of table – arm length/reach</li> <li>• Breadth of table – arm length/reach</li> <li>• Distance between ironing board feet – breadth of human feet/stance</li> <li>• Shape/size of table top – considers size of clothing</li> <li>• Any other suitable response</li> </ul> <p>Any 1 ironing board part <u>linked</u> to 1 piece of appropriate anthropometric information @ 2 marks  <i>Vague responses max 1 mark.</i></p>	
(ii)	<ul style="list-style-type: none"> <li>• Lowering</li> <li>• Ironing</li> <li>• Adjusting</li> <li>• Erecting</li> <li>• Folding</li> <li>• Bending</li> <li>• Lifting</li> <li>• Carrying</li> <li>• Etc</li> </ul> <p>Any 1 verb <u>linked</u> to 1 appropriate ironing board aspect plus justification @ 2 marks  <i>Vague responses max 1 mark.</i></p>	
(iii)	<ul style="list-style-type: none"> <li>• Blue ironing surface versus shiny metal frame indicating usage</li> <li>• Clean looking</li> <li>• Safe appearance</li> <li>• Sturdy appearance</li> <li>• Shape of ironing surface</li> <li>• Position/shape of racks indicate function</li> <li>• Any other suitable response</li> </ul> <p>As psychology is easily linked with emotion, some sensible reference to happy, sad, desire, secure, safe, modern lifestyle, user friendliness etc is also acceptable. To gain 2 marks, responses would need to include an emotion/feeling <u>linked</u> to the ironing board.  Any 1 described answer @ 2 marks.  <i>Vague responses max 1 mark.</i></p>	

(c) (i)	<p>Function</p> <ul style="list-style-type: none"> <li>• Shape of ironing surface to suit clothes</li> <li>• Rack for ironed clothes to save time</li> <li>• Rack for steam iron to protect table top</li> <li>• Adjustable to suit various heights of users</li> <li>• Can be folded for easy storage</li> <li>• End caps to aid stability/protect floor surface</li> <li>• Etc</li> </ul> <p>Any part of the ironing board <u>linked</u> to its functional aspect. Any 1 described answer @ 2 marks (max 2) <i>Vague responses max 1 mark.</i></p>	
(ii)	<p>Safety</p> <ul style="list-style-type: none"> <li>• Stability</li> <li>• User protection (finger traps etc)</li> <li>• Fire hazard</li> <li>• Steam iron storage</li> <li>• Etc</li> </ul> <p>Any of the above safety issues <u>linked</u> to an appropriate requirement of the ironing board. Any 1 described answer @ 2 marks (max 2) <i>Vague responses max 1 mark.</i></p>	
(ii)	<p>Durability</p> <ul style="list-style-type: none"> <li>• Material properties</li> <li>• Product lifespan</li> <li>• Joining methods</li> <li>• Maintenance requirements</li> <li>• Mechanisms</li> <li>• Etc</li> </ul> <p>Any of the above durability issues <u>linked</u> to an appropriate part/requirement of the ironing board. Any 1 described answer @ 2 marks (max 2) <i>Vague responses max 1 mark.</i></p>	

**SECTION B**

<b>Q2</b>		
<b>(a)</b>	(i)	<ul style="list-style-type: none"> <li>• Wood turning/turning (not lathing)</li> <li>• CNC router</li> </ul> <p>1 mark for correct response.</p>
	(ii)	<ul style="list-style-type: none"> <li>• Spindle into socket (wood glue - 1 mark)</li> <li>• Screw from underside (gluing - 0 marks)</li> <li>• Drill hole and glue</li> <li>• Dowel into spindle and shelf</li> <li>• K-D fittings</li> <li>• Any other suitable response</li> </ul> <p>Describing suitable method marked on a 2-1-0 scale</p>
	(iii)	<ul style="list-style-type: none"> <li>• Jig saw</li> <li>• Band saw</li> <li>• Electric hand router</li> <li>• CNC router</li> <li>• Fret/scroll saw</li> <li>• Drum sander</li> <li>• Any other suitable power tool</li> </ul> <p>1 mark for correct response.</p>
<b>(b)</b>		<ul style="list-style-type: none"> <li>• Difficulty in understanding instructions</li> <li>• Missing parts</li> <li>• Damaged parts</li> <li>• Tools required not available</li> <li>• Some skills required</li> <li>• May not have transport</li> <li>• Time consuming</li> <li>• No guarantee of quality construction</li> <li>• Etc</li> </ul> <p>1 mark per correct response up to total of 2 marks.</p>
<b>(c)</b>		<ul style="list-style-type: none"> <li>• Softwood grows quicker</li> <li>• Sustainable</li> <li>• Does not threaten rain forests</li> <li>• Ozone layer/polar ice caps/planet issues</li> <li>• Wildlife issues</li> <li>• Etc</li> </ul> <p>1 mark per correct response up to total of 2 marks.</p>
<b>(d)</b>		<ul style="list-style-type: none"> <li>• Varnish (polyurethane on its own - 0 marks)</li> <li>• Lacquer</li> <li>• Wax</li> <li>• Stain</li> <li>• French polish/shellac</li> <li>• Sanding sealer</li> <li>• Danish/teak/linseed oil</li> </ul> <p>1 mark per correct response up to total of 2 marks.</p>

<b>Q3</b>				
<b>(a)</b>	<b>(i)</b>	Stage D	4	Purple
	<b>(ii)</b>	Stage A	1	Pink
	<b>(iii)</b>	Stage B	2	Blue
<b>(b)</b>		<p>Could include statements such as:  ‘some components are designed to fail’ (1 mark)  ‘consumers have to buy new products because old ones are too expensive to repair’ (2 marks)  Explanation marked on a 2-1-0 scale</p>		
<b>Q4</b>				
<b>(a)</b>		<p>Marks awarded for justifying choice of target market for the clock selected.  2 marks for target market and matching reason.  Target market plus vague response - 1 mark</p>		
<b>(b)</b>		<p>Clock A – 1 mark plus two reasons for justifying selection  1 mark + 2 marks  Clock B (incorrect but with valid reasons could get 2 marks)</p>		
<b>Q5</b>				
<b>(a)</b>		<p>This question could be answered in a variety of ways.  An aspect could be a part of the helmet or a typical design ‘issue’ (eg safety, durability, aesthetics etc)  A description of each evaluative method will attract marks when appropriately linked to an aspect.  Qualitative and/or quantitative data may result from evaluation.  <i>No marks are awarded for stating aspects or defining methods of evaluation.</i></p>		
<b>(a)</b>	<b>(i)</b>	Description marked on a 2-1-0 scale.		
	<b>(ii)</b>	Description marked on a 2-1-0 scale.		
	<b>(iii)</b>	Description marked on a 2-1-0 scale.		
<b>(b)</b>		<p>British Standard Kite mark (not safety mark)</p> <ul style="list-style-type: none"> <li>• Mark of quality</li> <li>• Tested to a standard</li> <li>• Guarantee of quality</li> <li>• Safe to use</li> <li>• Any other suitable response</li> </ul> <p>1 mark per correct response up to total of 2 marks.</p>		
<b>(c)</b>	<b>(i)</b>	<p>Composite material – combination of materials  1 mark for correct response.</p>		
	<b>(ii)</b>	<p>Any composite material eg</p> <ul style="list-style-type: none"> <li>• GRP</li> <li>• Carbon fibre</li> <li>• Concrete</li> <li>• Kevlar</li> <li>• Manufactured boards/alloys/polymers</li> <li>• Etc</li> </ul> <p>1 mark for correct response.</p>		

[END OF MARKING INSTRUCTIONS]