

# Mark Scheme (Results)

June 2014

Pearson Edexcel GCSE  
Design & Technology (5RM02/01)

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Summer 2014

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## General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question Number	Answer	Mark
<b>1</b>	C No alternatives	<b>(1)</b>
Question Number	Answer	Mark
<b>2</b>	B No alternatives	<b>(1)</b>
Question Number	Answer	Mark
<b>3</b>	C No alternatives	<b>(1)</b>
Question Number	Answer	Mark
<b>4</b>	A No alternatives	<b>(1)</b>
Question Number	Answer	Mark
<b>5</b>	D No alternatives	<b>(1)</b>
Question Number	Answer	Mark
<b>6</b>	A No alternatives	<b>(1)</b>
Question Number	Answer	Mark
<b>7</b>	D No alternatives	<b>(1)</b>
Question Number	Answer	Mark
<b>8</b>	B No alternatives	<b>(1)</b>
Question Number	Answer	Mark
<b>9</b>	A No alternatives	<b>(1)</b>
Question Number	Answer	Mark
<b>10</b>	C No alternatives	<b>(1)</b>

Question Number	Answer	Mark								
<b>11. (a)</b>	<table border="1"> <tr> <td>Use</td> <td> <ul style="list-style-type: none"> <li>• <b>Measuring</b> lengths/ out/ sizes</li> <li>• Connecting points to make a straight line</li> </ul>           (Do not accept drawing straight lines) (1)         </td> </tr> <tr> <td>Name</td> <td> <ul style="list-style-type: none"> <li>• Coping saw</li> </ul>           (only answers) (1)         </td> </tr> <tr> <td>Name</td> <td> <ul style="list-style-type: none"> <li>• Die / split die</li> </ul>           (only answers - Do not accept tap and die, or die/tap, or tap/die) (1)         </td> </tr> <tr> <td>Name</td> <td> <ul style="list-style-type: none"> <li>• Washer</li> </ul>           (only answer) (1)         </td> </tr> </table>	Use	<ul style="list-style-type: none"> <li>• <b>Measuring</b> lengths/ out/ sizes</li> <li>• Connecting points to make a straight line</li> </ul> (Do not accept drawing straight lines) (1)	Name	<ul style="list-style-type: none"> <li>• Coping saw</li> </ul> (only answers) (1)	Name	<ul style="list-style-type: none"> <li>• Die / split die</li> </ul> (only answers - Do not accept tap and die, or die/tap, or tap/die) (1)	Name	<ul style="list-style-type: none"> <li>• Washer</li> </ul> (only answer) (1)	<b>(4)</b>
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Question Number	Answer	Mark
<b>11. (b)</b>	<p><b>Two</b> properties given from:</p> <ul style="list-style-type: none"> <li>• Corrosion resistant/self healing (1)</li> <li>• Light weight (do not accept light on its own) (1)</li> <li>• Soft (1)</li> <li>• Ductile (1)</li> <li>• Good conductor of heat/electricity (1)</li> <li>• Malleable/easily bent (1)</li> <li>• Good fluidity properties (1)</li> <li>• Low melting point (1)</li> <li>• Good strength to weight ratio (1)</li> <li>• Durable (1)</li> <li>• Low density (1)</li> </ul> <p>[Do not accept will not rust]</p> <p style="text-align: right;">2 x 1</p>	<b>(2)</b>

Question Number	Answer	Mark
<b>11. (c) (i)</b>	<p><b>Three</b> risks given from:</p> <ul style="list-style-type: none"> <li>• Chuck key/work flying out (1)</li> <li>• Bits flying off into your eyes / work coming out (1)</li> <li>• Tie / hair /clothing getting caught (1)</li> <li>• Tool banging into chuck (1)</li> <li>• Cuts from swarf / waste material (1)</li> <li>• Hot bits of metal / work burning you (1)</li> <li>• Fingers/ hands caught/trapped/injuries (1)</li> </ul> <p style="text-align: right;">3 x 1</p>	<b>(3)</b>

Question Number	Answer	Mark
<b>11. (c) (ii)</b>	<p><b>Two</b> processes named:</p> <ul style="list-style-type: none"> <li>• Facing / facing off (1)</li> <li>• Parallel turning (1)</li> </ul> <p>(Only Answers)</p> <p style="text-align: right;">2 x 1</p>	<b>(2)</b>

Question Number	Answer	Mark
<b>11. (d) (i)</b>	<p><b>Two</b> advantages given from:</p> <ul style="list-style-type: none"> <li>• No surface finishing required (1)</li> <li>• Acrylic is available in a range of colours (1)</li> <li>• Acrylic is lighter (1)</li> <li>• Easily cut on a laser (1)</li> <li>• Acrylic is easily <b>heated</b> and bent into shape/ moulded/ formed (1)</li> </ul> <p>(Do not accept cheaper or anything related to recycling)</p> <p style="text-align: right;">2 x 1</p>	<b>(2)</b>

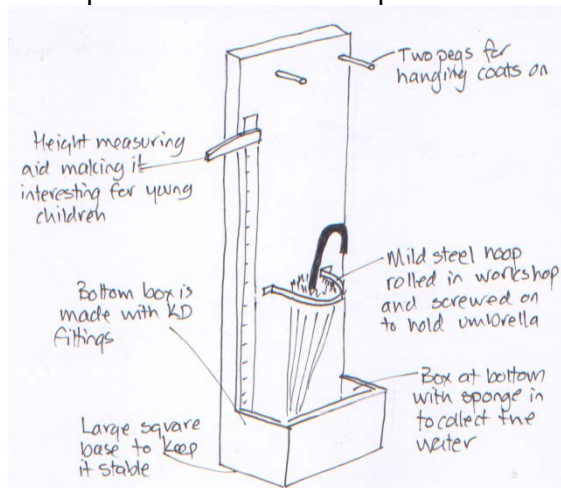
Question Number	Answer	Mark
<b>11. (d) (ii)</b>	<p><b>One</b> disadvantage given from:</p> <ul style="list-style-type: none"> <li>• Acrylic needs to be heated (1) in order to bend it (1)</li> <li>• Acrylic is brittle (1) and will break /snap if dropped (1)</li> <li>• Acrylic scratches easily (1) meaning it loses its visual appeal (1)</li> <li>• Less easy to recycle (1) Therefore more time consuming/ expensive (1)</li> </ul> <p style="text-align: right;">2 x 1</p>	<b>(2)</b>

Question Number	Answer	Mark
11. (e)	<p><b>Two</b> advantages described from:</p> <ul style="list-style-type: none"> <li>• Each one is identical/ correct shape/ size/ accurate (1) which will help to reduce error / waste (1)</li> <li>• It is quicker (1) because you can just trace around it (1)</li> <li>• You can nest / tessellate / lay plan the shape (1) therefore maximising the material / reduce waste (1)</li> </ul> <p style="text-align: right;">2 x 1 2 x 1</p>	<b>(4)</b>

Question Number	Answer	Mark
12.	<p><b>Design idea 1</b></p> <p>Candidates may answer any specification point in either graphical form or by annotation.</p> <p><b>No marks are awarded for the quality of graphical communication.</b></p> <ul style="list-style-type: none"> <li>• provide a method of holding two coats (1) e.g. on a hook / pegs / dowel / folded in a box/ coat hanger</li> <li>• hold an umbrella (1) e.g. in a cupboard / tray / frame / shelf / hooks/ tubes</li> <li>• must collect any water that drips from the umbrella (1) e.g. tray / sponge/ mat/ bucket (will accept trays made in different ways)</li> <li>• must have a stable base (1) e.g. wide surface area in contact / tripod frame / heavy base/ fixed to a wall</li> <li>• be assembled at home (1) e.g. nuts and bolts / knock down fittings / slot together/ glued at home</li> <li>• be appealing to young children (1) e.g. use of images / shapes / colours / animal themes</li> <li>• be made from materials available in a school workshop (1) e.g. specific named material oak, acrylic</li> <li>• be manufactured, as a one off, using processes available in a school workshop (1) e.g. specific named process (Do not accept injection/ blow moulding)</li> </ul>	(8)



Example of candidate response:



This

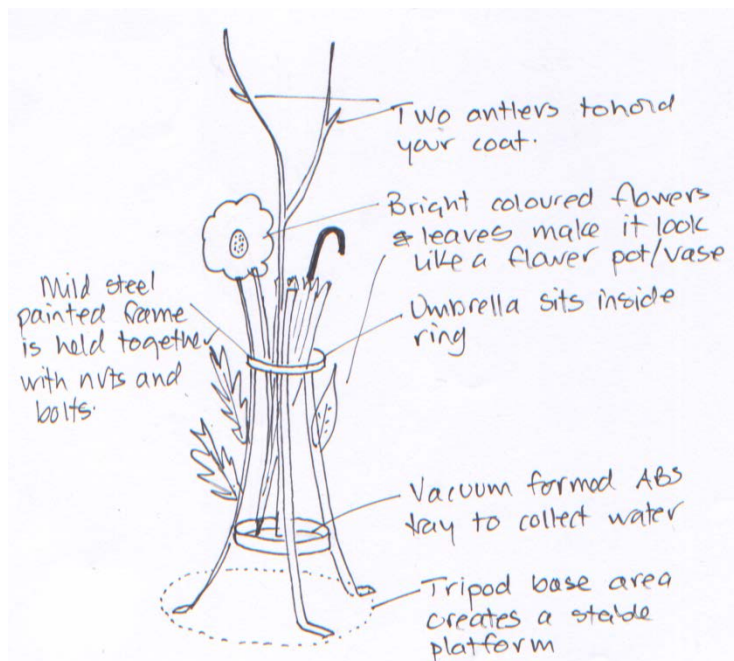
8 x 1

### Design idea 2

Marks for design idea 2 can only be awarded where specification points are resolved differently than in design idea 1.

(8)

Example of candidate response:



8 x 1

Question Number	Answer	Mark
<b>13. (a)</b>	<p><b>Two</b> properties given from:</p> <ul style="list-style-type: none"> <li>• Hard/ withstand wear and abrasion (1)</li> <li>• Tough/ withstand knocks/ impact resistance (1)</li> <li>• Durable/ withstand weathering/ deterioration (1)</li> </ul> <p><i>(Do not accept strong / cheap)</i></p> <p style="text-align: right;">1 x 1 1 x 1</p>	<b>(2)</b>

Question Number	Answer	Mark
<b>13. (b) (i)</b>	<p><b>Two</b> finishes given from:</p> <ul style="list-style-type: none"> <li>• Varnish (1)</li> <li>• Sanding sealer (1)</li> <li>• Polish (1)</li> <li>• Lacquer (1)</li> <li>• Paint (1)</li> <li>• Stain (1)</li> <li>• Shellac (1)</li> <li>• Danish oil / oil (1)</li> <li>• Wax (1)</li> </ul> <p style="text-align: right;">1 x 1 1 x 1</p>	<b>(2)</b>

Question Number	Answer	Mark
<b>13. (b) (ii)</b>	<p><b>One</b> reason described from:</p> <ul style="list-style-type: none"> <li>• To make it look nicer / improve the aesthetics (1) so that more people will buy it/ marketability (1)</li> <li>• To protect the surface (1) so that it lasts longer / more durable / will not soak up any water/ delays rotting (1)</li> <li>• To provide a smooth surface (1) so that children do not get splinters / makes it easier to clean / dust (1)</li> </ul> <p style="text-align: right;">2 x 1</p>	<b>(2)</b>

Question Number	Answer	Mark
13. (c) (i)	<p><b>One</b> reason explained from:</p> <ul style="list-style-type: none"> <li>• The handle (1) means the child has something to hold onto / support themselves / increases confidence (1)</li> <li>• The wheels allow the trolley to move (1) therefore allowing the young child to move (1)</li> <li>• It will help babies <b>learn to walk</b> (1) which is better than crawling (1)</li> <li>• They can move/ collect toys (1) in the tray area (1)</li> </ul> <p>[Do not allow any repeat/reference to children walking]</p> <p style="text-align: right;">2 x 1</p>	(2)

Question Number	Answer	Mark
13. (c) (ii)	<p><b>One</b> reason explained from:</p> <ul style="list-style-type: none"> <li>• The two wheels on each side (1) means that it is balanced (1)</li> <li>• The four wheels in contact with the floor create a shape / frame (1) which means it will not tip over (1)</li> <li>• Wheels at corners of tray/ shape of the tray (1) provide a large footprint which means that it will not tip over (1)</li> <li>• Low centre of gravity (1) means it is not top heavy (1)</li> </ul> <p>(Do not allow any reference to allow a stable base)</p> <p style="text-align: right;">2 x 1</p>	(2)

Question Number	Answer	Mark								
<p><b>13. (d)</b> <b>QWC</b></p>	<p><b>Evaluation to address the following issues:</b></p> <p><b>Form</b> Why is the product shaped / styled as it is?</p> <table border="1"> <thead> <tr> <th>Walking aid A</th> <th>Walking aid B</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> <li>• It has a handle onto which the child can hold</li> <li>• The base is a good shape so as not to topple over</li> <li>• The tray is capable of holding toys</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>• The child is held / supported inside and so cannot fall over / out</li> <li>• It has a tray in front so that they can play with toys</li> <li>• The wide base is out of the way of their feet and so they will not get run over / caught</li> <li>• Gives the baby greater independence</li> <li>• Child can sit in this and rest</li> <li>• Rounded shape/ less likely to damage furniture</li> </ul> </td> </tr> </tbody> </table> <p><b>User requirements</b> What qualities make the product attractive to potential users? (User might be child or parent)</p> <table border="1"> <thead> <tr> <th>Walking aid A</th> <th>Walking aid B</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> <li>• It can be used to store some toys</li> <li>• It gives the child greater freedom / mobility</li> <li>• Develops play skills</li> <li>• Learn / encourage to walk</li> <li>• Helps develop leg muscles</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>• It allows the child to develop their leg muscles</li> <li>• The child can also play with toys whilst being in the frame / cradle</li> <li>• It is wide and therefore will not fall over</li> <li>• It has a tray to be able to put things on</li> <li>• Baby can manoeuvre themselves quite a bit</li> <li>• Helps develop leg muscles</li> <li>• Easy to wipe clean</li> </ul> </td> </tr> </tbody> </table>	Walking aid A	Walking aid B	<ul style="list-style-type: none"> <li>• It has a handle onto which the child can hold</li> <li>• The base is a good shape so as not to topple over</li> <li>• The tray is capable of holding toys</li> </ul>	<ul style="list-style-type: none"> <li>• The child is held / supported inside and so cannot fall over / out</li> <li>• It has a tray in front so that they can play with toys</li> <li>• The wide base is out of the way of their feet and so they will not get run over / caught</li> <li>• Gives the baby greater independence</li> <li>• Child can sit in this and rest</li> <li>• Rounded shape/ less likely to damage furniture</li> </ul>	Walking aid A	Walking aid B	<ul style="list-style-type: none"> <li>• It can be used to store some toys</li> <li>• It gives the child greater freedom / mobility</li> <li>• Develops play skills</li> <li>• Learn / encourage to walk</li> <li>• Helps develop leg muscles</li> </ul>	<ul style="list-style-type: none"> <li>• It allows the child to develop their leg muscles</li> <li>• The child can also play with toys whilst being in the frame / cradle</li> <li>• It is wide and therefore will not fall over</li> <li>• It has a tray to be able to put things on</li> <li>• Baby can manoeuvre themselves quite a bit</li> <li>• Helps develop leg muscles</li> <li>• Easy to wipe clean</li> </ul>	<p><b>(6)</b></p>
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Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-2	Candidate identifies the area(s) of comparison with no development OR identifies and develops one area. Shows limited understanding of the comparison. Writing communicates ideas using everyday language but the response lacks clarity and organisation. The candidate spells, punctuates and uses the rules of grammar with limited accuracy.
Level 2	3-4	Candidate identifies some areas of comparison with associated developments showing some understanding of the comparison. Writing communicates ideas using D&T terms accurately and showing some direction and control in the organising of material. The candidate uses some of the rules of grammar appropriately and spells and punctuates with some accuracy, although some spelling errors may still be found.
Level 3	5-6	Candidate identifies a range of areas of comparison with associated developments showing a detailed understanding of the comparison. Writing communicates ideas effectively, using a range of appropriately selected D&T terms and organising information clearly and coherently. The candidate spells, punctuates and uses the rules of grammar with considerable accuracy.

Question Number	Answer	Mark
<b>14. (a)</b>	Thermoset / thermosetting plastic (Only answers)  1 x 1	<b>(1)</b>

Question Number	Answer	Mark
<b>14. (b)</b>	<b>Two</b> properties and linked justifications from: <ul style="list-style-type: none"> <li>• <b>Property:</b> good resistance to corrosion (1)</li> <li>• <b>Justification:</b> which means it will not rust / good for food use / dishwasher safe (1)</li> <li>• <b>Property:</b> hard (1)</li> <li>• <b>Justification</b> which means it can be ground / keep a sharp edge (1)</li> <li>• <b>Property:</b> tough (1)</li> <li>• <b>Justification:</b> which means it will be able to withstand knocks / bumps being dropped (1)</li> </ul> 4 x 1	<b>(4)</b>

Question Number	Answer	Mark
<b>14. (c)</b>	<ul style="list-style-type: none"> <li>• The blade is <b>heated</b> red/cherry/red hot/critical temperature/900°C (1) and then <b>quenched/dipped</b> in water (1)</li> <li>• Blade is heated and dipped into carbon powder (1) allowed to cool / process repeated several times (1)</li> </ul> 2 x 1	<b>(2)</b>

Question Number	Answer	Mark
<b>14. (d) (i)</b>	<b>Two</b> pieces of information from: <ul style="list-style-type: none"> <li>• Price / cost (1)</li> <li>• Country of origin (1)</li> <li>• When it was made (1)</li> <li>• How many have been sold / daily / weekly / monthly / total (1)</li> <li>• How many are in stock/ have been made (1)</li> <li>• Consumer history / profile (1)</li> <li>• Product identification (1)</li> </ul> 1 x 1 1 x 1	<b>(2)</b>

Question Number	Answer	Mark
<b>14. (d)</b> <b>(ii)</b>	<p><b>Two</b> ways described from:</p> <ul style="list-style-type: none"> <li>• They are able to communicate (1) with designers / manufacturers / other retailers/ suppliers (1)</li> <li>• It is cheaper for them to do a bulk mail shot via email (1) in comparison with normal post costs (1)</li> <li>• It is quicker (1) which means they can send their information out faster than normal post/ internal departments (1)</li> <li>• They are able to attach documents / order forms / special offers/ advertise (1) which means that they can target their mailing more specifically (1)</li> <li>• They can send data files / spread sheets (1) to their accountant / do tax files (1)</li> <li>• They can send CAD files (1) to manufactures in order to make prototypes / get prices (1)</li> <li>• Internal communications (1) maintains/ keeps record of discussions/ requests/ decisions (1)</li> </ul> <p style="text-align: right;">2 x 1 2 x 1</p>	<p style="text-align: center;"><b>(4)</b></p>

Question Number	Answer	Mark
<p><b>14. (e)</b> <b>QWC</b></p>	<p>Indicative content  <b>Discussion to address the following issues:</b></p> <ul style="list-style-type: none"> <li>• Demise of high street shops/retail outlets</li> <li>• Targeted marketing and selling / reduction in high street shopping and town centres becoming run down / shops closing</li> <li>• Ability of internet stores to capture/retain shopping history</li> <li>• Loyalty cards (eg nectar) allow retailers to gather information on shoppers/shopping habits</li> <li>• Ability of online retailers to undercut high street prices</li> <li>• People are staying at home and are not socialising/exercising adding to obesity problems</li> <li>• Deception and fraudulent/copies/fakes</li> <li>• Heightened identity theft</li> <li>• Easier to track down items online than around high street</li> <li>• Easier to compare prices online of identical items</li> <li>• 'Right here right now'</li> <li>• Next day delivery to specified addresses can cause problems if you are working all day/ effect on neighbours/extra travel and queuing at post office</li> <li>• Can find products on line that are not local to where you live</li> <li>• Greater access for housebound/ disabled</li> <li>• Shift/ change in employment patterns</li> </ul>	<p style="text-align: center;"><b>(6)</b></p>



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