

# **Design and Technology**

General Certificate of Secondary Education

Unit **A534**: Graphics: Technical Aspects of Designing and Making

## **Mark Scheme for June 2011**

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All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

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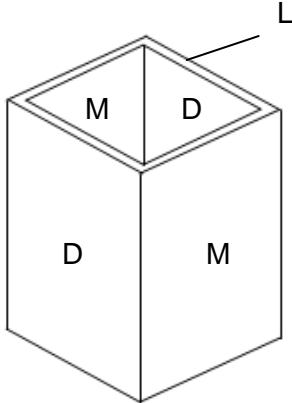
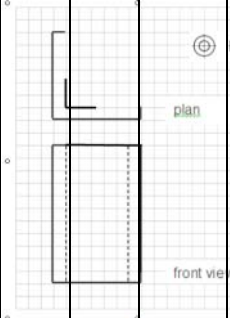
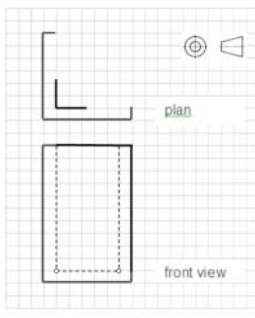
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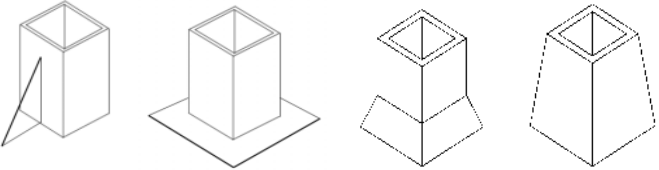
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Question		Expected Answer	Mark	Rationale/Additional Guidance
1	(a)	Card or paper  Award one mark for naming a suitable material.	[1]	<b>Do not accept:</b> Plastic, foam board, cardboard, corrugated card or any type of board.
	(b) (i)	Lithography	[1]	This is the only correct answer.
	(b) (ii)	Check spelling [1] by getting person to read it [1] Check sizes [1] by measuring [1] Check alignment of colours [1] by looking at colour registration marks [1]  ...or similar answers that include the 'What' and 'How'.	[2]	Identification of the proof stage on its own is not worthy of a mark. The two aspects to this answer are:  1. <b>What</b> is being checked 2. <b>How</b> is it being checked
	(c) (i)	Ultra Violet  Both words are required for the mark.	[1]	This is the only acceptable answer. Do not penalise candidates for incorrect spelling – if the words can be recognised award the mark.
	(c) (ii)	'Spot' coating is where only part of the design is coated	[1]	Accept answers that clearly indicate that 'spot' coating refers to only part of the document.
	(c) (iii)	Improves appearance or locks in colours or non smudge surface for colours or makes it shiny or makes it waterproof or more environmentally friendly.  Award one mark for naming each appropriate reason.	[2]	The two reasons must be clearly different and not the same reason given twice. No marks for statements about quality unless explained. Do not accept 'protects from damage', or 'durable'.
	(d)	The two aspects to this answer are:  1. Outline completed accurately [1] 2. Fold line – correct position and 'dotted/chain' [1]  Award one mark for each aspect.	[2]	Award the marks for freehand and accurate drawn solutions. Lines should be within plus or minus 2mm of the correct position on the grid for the mark to be awarded.

Question		Expected Answer	Mark	Rationale/Additional Guidance
	(e)	Colours change [1] in response to changes in light levels [1] As the light changes [1] the colour changes [1]  Award one mark for each aspect.	[2]	The two aspects to this answer are:  1. <b>What</b> happens 2. <b>Why</b> it happens
		<b>Question Total</b>	[12]	

Question	Expected Answer	Mark	Rationale/Additional Guidance
<p>2 (a)</p>	<p>LH outer surface &amp; RH outer surface different tone [1]                      Inner surfaces same tone as corresponding outer surfaces [1]                      Top surface being lightest (could be unshaded) [1]</p> 	<p>[3]</p>	<p>Colour is unimportant.                      Each face should be evenly <b>shaded</b> and within the outer edge.                      Award marks if a different light source means variations in the position of tones (from those shown in the example on the left).                      Do not award any marks for highlights.                      Do not award first mark if faces are not evenly shaded or outside outline</p> <p>One mark can be awarded if a candidate has added shadows outside the drawing of the desk tidy and there is <b>no</b> tonal work on the actual drawing.                      The two outer vertical sides must clearly show different tones. The top edge must be lighter</p>
<p>(b)</p> 	<p>The three aspects to this answer are:</p> <ol style="list-style-type: none"> <li>1. View of plan completed (two squares) [1]</li> <li>2. External view of front completed [1]</li> <li>3. Hidden detail added to the front view [1]</li> </ol> <p>Award one mark for each aspect.</p> <p>Note: Ignore any extras eg diagonals on plan, etc.</p>	<p>[3]</p>	<p>For the first two marks the lines must be the correct size and in the correct position (plus or minus 1mm).</p> <p>For the 'hidden detail' mark accept interpretations that include or do not include a base. Line must be broken, not solid to award third mark. The examples below would both be awarded the mark.</p> 

Question	Expected Answer	Mark	Rationale/Additional Guidance
(c)	<p>The two aspects to this answer are:</p> <p>1. Show method, ie V cut, or straight cut [1]  2. Thickness of card must be shown uncut to form hinge [1]</p> <p>Award one mark for each aspect.  Do not accept 'scoring'</p>	[2]	 <p><i>cut part way through</i></p>  <p><i>remove a 'v' cut</i></p>
(d)	<p>The two aspects to this answer are:</p> <p>1. Solution or modification adds some stability [1]  2. Solution or modification adds stability in all directions [1]</p> <p>Award one mark for each aspect.</p> <p>Answers that involve <b>just</b> 'fixing to desk' eg screws /adhesives no marks, but if solution satisfies 1 and/or 2 above still award marks.  Accept adding weight to bottom of desk tidy</p>	[2]	 <p>1, 0                  1, 1                  1, 1                  1, 1</p>
(e)	<p>Material is cannot be/difficult to recycle [1] because materials cannot be separated or contributes to landfill [1].  Uses bleached paper [1] that causes pollution problems [1].  Foam board is made from petro chemicals [1] that cause pollution problems [1].  Not biodegradable [1] because it contains plastic based foam [1]</p>	[2]	<p>The two aspects to this answer are:</p> <p>1. <b>Identifies</b> the environmentally unfriendly aspect  2. <b>Explains</b> why it is environmentally unfriendly</p> <p>Note explanation must be of the identified environmentally unfriendly aspect to gain both marks</p>
	<b>Question Total</b>	<b>[12]</b>	

Question		Expected Answer	Mark	Rationale/Additional Guidance	
3	(a)	<p>The three aspects to this answer are:</p> <p>1. The solution must be a sectional drawing (orthographic, isometric or oblique. Accept single line drawing. [1]</p> <p>2. Drawing shows a 'draft' and a 'lip' [1]</p> <p>3. Correct 'thickness' of material shown. [1]</p> <p>Award one mark for each aspect. If a section of former / mould is shown max one mark</p>	[3]	Do not award marks for hatching. The third mark should only be awarded if there is clear evidence of all material given a thickness.	
	(b)	(i)	Polystyrene or HIPS	[1]	These are the only acceptable answers to this question
	(b)	(ii)	<p>The symbol could be drawn, printed or applied by a stick on label [1].</p> <p>or</p> <p>Build the symbol into the vacuum forming mould [1] so that it is moulded into each tray [1]</p> <p>or</p> <p>Use of term Embossing [1], explanation of embossing included in the vacuum moulding process [1]</p>	[2]	Applying the symbol is only worth one mark. The most suitable method is concerned with building it into the mould so that it will appear on each tray.

Question	Expected Answer	Mark	Rationale/Additional Guidance
(c)	<p>Read through candidates answer decide on the level of response, then decide whether it just meets that level or clearly meets that level.</p> <p><b>Maximum of two marks for a list</b></p> <p>Points that should be considered are:</p> <ul style="list-style-type: none"> <li>• Understanding of the term ‘environmentally friendly’ – will not harm the environment through pollution...</li> <li>• How symbols can help people become environmentally friendly - identification of material or means of recycling...</li> <li>• Recycling symbols such as Mobius loop, Tidyman...</li> <li>• Recognition of materials such as aluminium and plastics</li> <li>• How/where to safely dispose of products – recycling bin, recycling centre...</li> <li>• Benefits of recycling – allows materials to be reused. Cost savings...</li> <li>• Incentives for recycling - green image, cost savings...</li> </ul>	<b>[6]</b>	<p><b>Level 1 (0-2 marks)</b> Basic explanation, showing some understanding of the reasons for symbols on packaging. There will be little or no use of specialist terms. Answers may be ambiguous or disorganised or ‘list like’. Errors of grammar, punctuation and spelling may be intrusive.</p> <p><b>Level 2 (3-4 marks)</b> Adequate explanation, showing an understanding of symbols on packaging. Can provide a description of some of examples of appropriate symbols. There will be some use of specialist terms, although these may not always be used appropriately. The information will be presented for the most part in a structured format. There may be occasional errors in spelling, grammar and punctuation</p> <p><b>Level 3 (5-6 marks)</b> Thorough explanation, showing clear understanding of the reasons for symbols on packaging. Can explain examples of symbols and their contribution to environmentally friendly disposal of packaging. Specialist terms will be used appropriately and correctly. The information will be presented in a structured format. The candidate will demonstrate the accurate use of spelling, punctuation and grammar</p>
	<b>Question Total</b>	<b>[12]</b>	



Question		Expected Answer	Mark	Rationale/Additional Guidance
4	(a)	Computer Aided Design	[1]	This is the only acceptable answer and all three words are required. Do not penalise for incorrect spelling - if the words can be recognised award the mark.
	(b)	Parts of the design can be enlarged [1] so that details can be worked on [1] or Cropping [1] a design so that the unwanted parts of the drawing are removed [1]  Designs can be viewed in 3D [1], as a method of virtual modelling [1]  ...or similar answers	[2]	The two aspects to this answer are:  1. Understanding/naming of a specific 'manipulation' 2. Why it would be done  Manipulation is broadly defined as rotating, cropping, resizing and recolouring, layering, distorting, blurring, mirroring, justifying.
	(c)	Use a safety mat/board or use a safety rule or keep fingers behind the blade or away from the blade or do not cut towards yourself, use correct stance, use sharp knife, knife not blunt, clothing /hair out of way, avoid distractions.  Award one mark for each correct answer (1 x 2).	[2]	Only award one mark for a safety precaution that is reworded and given twice.  <b>Do not accept:</b> Wear an apron Wear goggles or eye protection Wear gloves Look at what you are doing
	(d)	PVA, Polyvinyl acetate, glue gun, double-sided tape, Pritt stick, contact adhesive, Spray mount, Super glue, accept appropriate trade names  Award one mark for a correct answer	[1]	<b>Do not accept:</b> Glue Sellotape Epoxy resin

Question	Expected Answer	Mark	Rationale/Additional Guidance
(e)	<p>Read through candidates answer decide on the level of response, then decide whether it just meets that level or clearly meets that level.</p> <p><b>Maximum of two marks for a list</b></p> <p>Points that might be considered are:</p> <p>Advantages</p> <ul style="list-style-type: none"> <li>• Uses less materials such as paper (more environmentally friendly)</li> <li>• Can choose different layouts (more flexible)</li> <li>• Easy to make changes</li> <li>• Mistakes can easily be rectified</li> <li>• Easier to store the design</li> <li>• Easier to share by transferring electronically</li> <li>• Can take less time (copying and pasting identical parts)</li> <li>• Can paste into another document</li> <li>• Takes up less physical space in an office</li> </ul> <p>Disadvantages</p> <ul style="list-style-type: none"> <li>• Initial cost of equipment etc</li> <li>• Staff need to be trained to use the equipment</li> <li>• Computer systems need to be maintained/updated</li> <li>• Computers use electricity (link to cost or energy use)</li> <li>• Potential for data loss</li> <li>• Initial sketches are difficult</li> </ul> <p><b>Do not accept:</b>  Costs less (unless qualified)  Quicker (unless qualified)  Disadvantages that are just the advantage reversed, eg: more expensive/cheaper</p>	<b>[6]</b>	<p><b>Level 1 (0-2 marks)</b>  Basic discussion, showing some understanding of the advantages or disadvantages of modelling on a computer rather than making a physical model. There will be little or no use of specialist terms. Answers may be ambiguous or disorganised or 'list like'. Errors of grammar, punctuation and spelling may be intrusive.</p> <p><b>Level 2 (3-4 marks)</b>  Adequate discussion, showing a good understanding of the advantages and disadvantages of modelling on a computer system. There will be some use of specialist terms, although these may not always be used appropriately. The information will be presented for the most part in a structured format. There may be occasional errors in spelling, grammar and punctuation</p> <p><b>Level 3 (5-6 marks)</b>  Thorough discussion, showing clear understanding of the advantages and disadvantages of using a computer for modelling. Can explain examples and their advantages. Specialist terms will be used appropriately and correctly. The information will be presented in a structured format. The candidate will demonstrate the accurate use of spelling, punctuation and grammar</p>
	<b>Question Total</b>	<b>[12]</b>	

Question		Expected Answer	Mark	Rationale/Additional Guidance
5	(a)	Questionnaire, interview, internet search, writing letters, reading books, survey, talk to an expert, visit, product testing/collecting  Award one mark for each correct answer (1 x 2)	[2]	Only award one mark for a research method that is re-worded and given twice.  Do not accept observation
	(b)	Bar chart/graph, histogram, block graph or column chart [1] Pie chart/graph [1]  Award one mark for each correct answer (2 x 1)	[2]	These are the only correct answers and must be in the appropriate box. Do not accept just 'Bar' or 'Pie'.
	(c)	Anthropometric data shows human sizes (1) and can be used to determine the size of a product (1)  Award no marks for answers that refer to ergonomics not Anthropometrics.	[2]	Accept variations that cover the two key aspects of:  1. <b>Understanding</b> of the term anthropometric data being concerned with the sizes of human features 2. <b>How</b> it can be used to determine the size or position of a product
	(d)	Sketches and notes show a design for a display that it:  is made from card [1]  is freestanding [1]  states the purpose of the fundraising [1]  shape or design fully reflects purpose (Trees, flowers, etc) [1]  shows progress towards the total of £1000 [1] (at least four different amounts £100, £200 and £50 shown)  the method of updating the totals (sliding, Velcro...) is clearly shown. [1]	[6]	Tick (✓) to indicate where a mark has been awarded.
		<b>Question Total</b>	[12]	
		<b>Total</b>	[60]	

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