

GCSE

**Design and Technology:
Graphic Products**

Unit 1 Written Paper
Mark scheme

4550
June 2016

Version: 1.0 Final
















Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Assessment Writer.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this mark scheme are available from aqa.org.uk

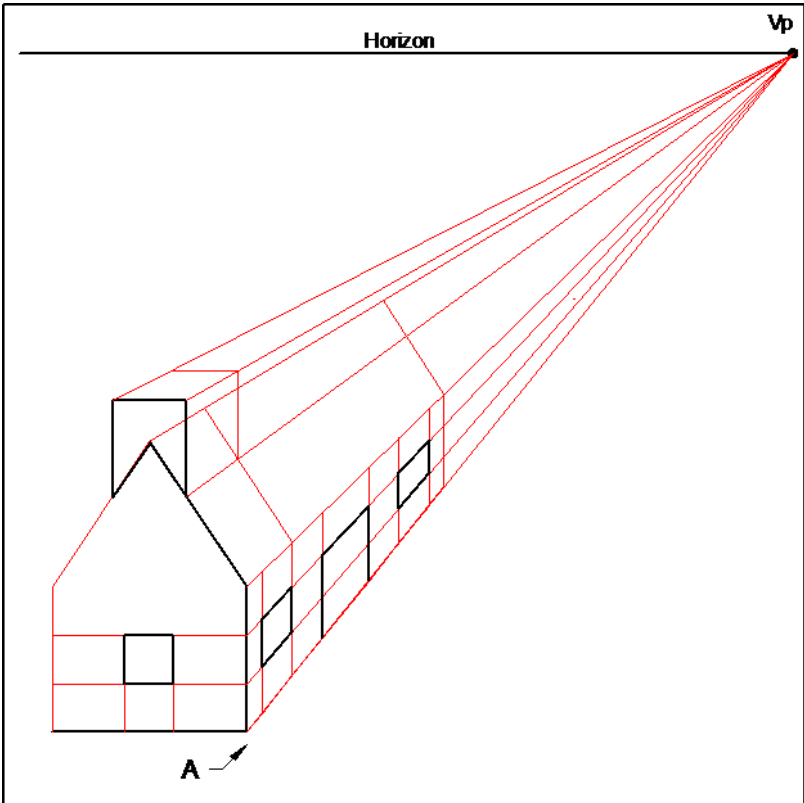
		Section A	Mark on paper								
1	a	<p>In the spaces below, sketch two different letter styles (typeface) for the name 'Green Fingers'. [4 marks] (2 x 2 marks)</p> <table border="1"> <tr> <td>High Level: Excellent letter style, double line, possible evidence of construction and spacing. Relates to context. Neat well-formed letters.</td> <td>2</td> </tr> <tr> <td>Low Level: Single line construction or single thick construction. Irregular size/style or spacing.</td> <td>1</td> </tr> <tr> <td>No attempt or scribble or wrong slogan</td> <td>0</td> </tr> </table>	High Level: Excellent letter style, double line, possible evidence of construction and spacing. Relates to context. Neat well-formed letters.	2	Low Level: Single line construction or single thick construction. Irregular size/style or spacing.	1	No attempt or scribble or wrong slogan	0	4		
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		No attempt or scribble or wrong slogan	0								
1	b	<p>In the space below sketch four different images of fun characters based on fruit and/or vegetables. Include an indication of colour for each character. [6 marks]</p> <table border="1"> <tr> <td>High Level: 3-4 different images of fun fruit or veg characters. Clear and well communicated. Indicating colour.</td> <td>5-6</td> </tr> <tr> <td>Medium Level: 2-4 different images. Moderate level of Communication. Possible repetition and/or no indication of colour</td> <td>3-4</td> </tr> <tr> <td>Low Level: A single image or little variety or poorly communicated or not relevant to theme. Max 2 marks for repetition of ideas or not relevant to theme.</td> <td>1-2</td> </tr> <tr> <td>No attempt or not relevant or not answering the question.</td> <td>0</td> </tr> </table>	High Level: 3-4 different images of fun fruit or veg characters. Clear and well communicated. Indicating colour.	5-6	Medium Level: 2-4 different images. Moderate level of Communication. Possible repetition and/or no indication of colour	3-4	Low Level: A single image or little variety or poorly communicated or not relevant to theme. Max 2 marks for repetition of ideas or not relevant to theme.	1-2	No attempt or not relevant or not answering the question.	0	6
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No attempt or not relevant or not answering the question.	0										
1	c	<p>Using the design criteria below, produce a series of annotated sketches to show the development of your design ideas from page 3 for the graphics to go on the backboard of the garden gift set. [12 marks]</p> <p>Design Criteria The graphics must:</p> <ul style="list-style-type: none"> include the product name 'Green Fingers' in a suitable letter style (typeface) show suitable relevant images of fun characters based on fruit and/or vegetables appeal to children. <p>See additional marked examples on <u>Supporting Information drop down.</u></p> <table border="1"> <tr> <td>Award marks for:</td> <td></td> </tr> <tr> <td>High band level: There should be well communicated and creative sketches showing the clear progression and development of an idea(s) from page 3. Colour should be indicated and evidence of considering all of the design criteria through sketches and well-reasoned/justified notes.</td> <td>9-12</td> </tr> <tr> <td>Medium band level: An attempt at communicating through a reasonable level of sketching showing some/limited progression and development of an idea(s) from page 3. Colour may be indicated and evidence of considering some of the design criteria through sketches and mainly descriptive notes. Maximum 6 marks for development through boxes and shapes.</td> <td>5-8</td> </tr> </table>	Award marks for:		High band level: There should be well communicated and creative sketches showing the clear progression and development of an idea(s) from page 3. Colour should be indicated and evidence of considering all of the design criteria through sketches and well-reasoned/justified notes.	9-12	Medium band level: An attempt at communicating through a reasonable level of sketching showing some/limited progression and development of an idea(s) from page 3. Colour may be indicated and evidence of considering some of the design criteria through sketches and mainly descriptive notes. Maximum 6 marks for development through boxes and shapes.	5-8			
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		<p>Low band level: Stand-alone ideas with no progression or development of an idea(s) from page 3. Colour may/may not be indicated and limited consideration of the design criteria. Notes will be mainly labelling or single word responses.</p>	1-4											
		No attempt or not answered the question	0	12										
1	d	<p>The outline shape given below is the maximum size of card that can be used for the backboard. The dotted lines show the positions of:</p> <ul style="list-style-type: none"> the garden fork and trowel a euro slot. <p>On the outline shape produce a coloured presentation drawing of your final backboard for the garden gift set. [10 marks]</p> <p>See additional marked examples on Supporting Information drop down.</p>	<table border="1"> <tr> <td>Visual Impact:</td> <td></td> </tr> <tr> <td>High Level: High visual impact, immediate understanding of message, attractive, eye catching. Good layout. Good proportions and balance. Not cluttered. Possible evidence of construction. Possibly considered a shaped backboard. Good solid block colouring or tonal shading.</td> <td>7-10</td> </tr> <tr> <td>Medium Level: Some visual impact, some interpretation required or minor errors/omissions. A lack of proportion and balance.. Attempt at block colouring or tonal shading.</td> <td>4-6</td> </tr> <tr> <td>Low Level: Limited visual impact. Limited evidence or attention to layout. Not taken into account the position of euro slot or tools. Low or monochrome or poor attempt at colour.</td> <td>1-3</td> </tr> <tr> <td>No attempt or scribble</td> <td>0</td> </tr> </table>	Visual Impact:		High Level: High visual impact, immediate understanding of message, attractive, eye catching. Good layout. Good proportions and balance. Not cluttered. Possible evidence of construction. Possibly considered a shaped backboard. Good solid block colouring or tonal shading.	7-10	Medium Level: Some visual impact, some interpretation required or minor errors/omissions. A lack of proportion and balance.. Attempt at block colouring or tonal shading.	4-6	Low Level: Limited visual impact. Limited evidence or attention to layout. Not taken into account the position of euro slot or tools. Low or monochrome or poor attempt at colour.	1-3	No attempt or scribble	0	10
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1	e	<p>Evaluate the final backboard you have drawn in part (d) against one of the design criteria shown below.</p> <ul style="list-style-type: none"> include the product name 'Green Fingers' in a suitable letter style (typeface) show suitable relevant images of fun characters based on fruit and/or vegetables appeal to children. <p>[3 marks]</p>	<table border="1"> <tr> <td>High Level: Analytical/critical including justification/modification(s)</td> <td>3</td> </tr> <tr> <td>Medium Level: Mainly descriptive, weak justification</td> <td>2</td> </tr> <tr> <td>Low Level: Mainly self-congratulation</td> <td>1</td> </tr> <tr> <td>No attempt or not relevant or not answering the question</td> <td>0</td> </tr> </table> <p>If evaluated more than one of the design criteria-choose best evidence.</p>	High Level: Analytical/critical including justification/modification(s)	3	Medium Level: Mainly descriptive, weak justification	2	Low Level: Mainly self-congratulation	1	No attempt or not relevant or not answering the question	0	3		
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Total 35 marks for Section A														

2	a	<p>Section B</p> <p>Draw a straight line to match the adhesives in the table with the most suitable use.</p> <p>You must match each adhesive to a different use. [5 marks]</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Adhesives</th> <th style="text-align: center;">Use</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">Glue stick</td> <td>General purpose for paper, card, wood and foam board.</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">PVA</td> <td>Used for masking out areas when airbrushing.</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">Epoxy resin</td> <td>A two part adhesive. Creates a strong bond between most materials.</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">Hot glue</td> <td>Useful in model making or temporary joints.</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">Polymer cement</td> <td>Joining plastic to plastic.</td> </tr> <tr> <td></td> <td></td> <td>Solid glue. Bonds paper to paper</td> </tr> </tbody> </table> <p style="text-align: right; margin-top: 20px;">5</p> <p>Award 1 mark for each correct answer. Maximum 5 marks.</p>	Adhesives		Use		Glue stick	General purpose for paper, card, wood and foam board.		PVA	Used for masking out areas when airbrushing.		Epoxy resin	A two part adhesive. Creates a strong bond between most materials.		Hot glue	Useful in model making or temporary joints.		Polymer cement	Joining plastic to plastic.			Solid glue. Bonds paper to paper	
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2	b	<p>State two safety procedures to be followed when using spray adhesives in the graphics studio. [2 marks]</p> <p>Only award for safety issues related to breathing :</p> <p>Wear a face mask, use extraction, ventilation, spray booth. Do not accept safety glasses or gloves or aprons.</p> <p>Award 1 mark for each correct answer.</p>	2										
2	c	<p>Below is an image of a fixative.</p> <p>Complete the paragraph below by adding the missing words from the list below. [4 marks]</p> <p>staples hairspray pastels fix double sided tape</p> <p>An aerosol spray used to FIX soft coloured pencils or PASTELS to paper or card. A cheaper alternative fixative is HAIRSPRAY. Other useful fixings include DOUBLE SIDED TAPE or STAPLES. (Vica versa)</p> <table border="1"> <tr> <td>5 correct responses</td> <td style="text-align: center;">4</td> </tr> <tr> <td>3 correct</td> <td style="text-align: center;">3</td> </tr> <tr> <td>2 correct</td> <td style="text-align: center;">2</td> </tr> <tr> <td>1 correct</td> <td style="text-align: center;">1</td> </tr> <tr> <td>0 correct</td> <td style="text-align: center;">0</td> </tr> </table>	5 correct responses	4	3 correct	3	2 correct	2	1 correct	1	0 correct	0	4
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2	d	<p>i</p> <p>The packaging below holds a memory card. Name the specific type of packaging shown in the image. [2 marks]</p> <table border="1"> <tr> <td>Award marks as follows:</td> <td></td> </tr> <tr> <td>Blister packaging</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Bubble packaging</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Not attempted or incorrect, not bubble wrap</td> <td style="text-align: center;">0</td> </tr> </table>	Award marks as follows:		Blister packaging	2	Bubble packaging	1	Not attempted or incorrect, not bubble wrap	0	2		
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2	d	<p>ii</p> <p>Use notes and sketches to show a suitable method of joining a clear moulded material to a backboard. [4 marks]</p> <p>Appropriate adhesive, staples, double sided tape, rivets, single fold(Hinge) or possibly heat seal method</p> <table border="1"> <tr> <td>High level: Effective sketching with notes, clear, well communicated appropriate method or</td> <td style="text-align: center;">4</td> </tr> <tr> <td>Effective sketching without notes, clear, well communicated appropriate method. With or without specified adhesive</td> <td style="text-align: center;">3</td> </tr> <tr> <td>Medium Level: Reasonable sketch, some errors or omissions, max 2 marks for Velcro or glue stick or tab construction only or unspecified adhesive.</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Low level: Difficult to understand, confused. Only relevant notes.</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Not attempted or inappropriate method</td> <td style="text-align: center;">0</td> </tr> </table>	High level: Effective sketching with notes, clear, well communicated appropriate method or	4	Effective sketching without notes, clear, well communicated appropriate method. With or without specified adhesive	3	Medium Level: Reasonable sketch, some errors or omissions, max 2 marks for Velcro or glue stick or tab construction only or unspecified adhesive.	2	Low level: Difficult to understand, confused. Only relevant notes.	1	Not attempted or inappropriate method	0	4 Total 17 marks
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3	<p>Using the information in Figure 1, complete a full-size single point perspective drawing of the model house. Include the chimney. The front edge of the house has been drawn for you at point A in Figure 2. [15 marks]</p> <p><u>PLACE INDIVIDUAL MARKS ON PAGE AS PER MMS.</u></p> <p><u>If not one point perspective mark line quality only.</u></p> <ul style="list-style-type: none"> ● <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">Award marks for accuracy of the house</td> <td></td> </tr> <tr> <td>High level: Accurate perspective drawing using the given sizes.</td> <td></td> <td style="text-align: center;">5-6</td> </tr> <tr> <td>Medium level: Attempt at perspective drawing, some errors. Sizes do not relate to given orthographic drawing</td> <td></td> <td style="text-align: center;">3-4</td> </tr> <tr> <td>Low level: Poor attempt-Award 1 mark for end view only</td> <td></td> <td style="text-align: center;">1-2</td> </tr> <tr> <td>Not attempted</td> <td></td> <td style="text-align: center;">0</td> </tr> </table> ● <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">Evidence of construction lines</td> <td></td> </tr> <tr> <td>High level: Evidence of construction lines to Vp and vertical</td> <td></td> <td style="text-align: center;">3</td> </tr> <tr> <td>Medium level: Some evidence of construction lines, not all to Vp</td> <td></td> <td style="text-align: center;">2</td> </tr> <tr> <td>Low level: Limited evidence of construction lines or some partially erased lines</td> <td></td> <td style="text-align: center;">1</td> </tr> <tr> <td>Not attempted</td> <td></td> <td style="text-align: center;">0</td> </tr> </table> ● <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">Award marks for windows and door Vertical windows and door, correct position, correct size, in perspective and construction lines.</td> <td></td> </tr> <tr> <td>High level: Excellent representation</td> <td></td> <td style="text-align: center;">3</td> </tr> <tr> <td>Medium level: Some evidence of considering the above</td> <td></td> <td style="text-align: center;">2</td> </tr> <tr> <td>Low level: Poor attempt</td> <td></td> <td style="text-align: center;">1</td> </tr> <tr> <td>Not attempted</td> <td></td> <td style="text-align: center;">0</td> </tr> </table> ● <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">Line quality-holistic</td> <td></td> </tr> <tr> <td>High level: Good line quality, straight lines, effective</td> <td></td> <td style="text-align: center;">3</td> </tr> <tr> <td>Medium level: Some errors. Evidence of double lines</td> <td></td> <td style="text-align: center;">2</td> </tr> <tr> <td>Low level: Poor quality, scribble or double lines, smudges/bleeding</td> <td></td> <td style="text-align: center;">1</td> </tr> <tr> <td>Not attempted</td> <td></td> <td style="text-align: center;">0</td> </tr> </table> <p>(perspective drawing on next page)</p>	Award marks for accuracy of the house			High level: Accurate perspective drawing using the given sizes.		5-6	Medium level: Attempt at perspective drawing, some errors. Sizes do not relate to given orthographic drawing		3-4	Low level: Poor attempt-Award 1 mark for end view only		1-2	Not attempted		0	Evidence of construction lines			High level: Evidence of construction lines to Vp and vertical		3	Medium level: Some evidence of construction lines, not all to Vp		2	Low level: Limited evidence of construction lines or some partially erased lines		1	Not attempted		0	Award marks for windows and door Vertical windows and door, correct position, correct size, in perspective and construction lines.			High level: Excellent representation		3	Medium level: Some evidence of considering the above		2	Low level: Poor attempt		1	Not attempted		0	Line quality-holistic			High level: Good line quality, straight lines, effective		3	Medium level: Some errors. Evidence of double lines		2	Low level: Poor quality, scribble or double lines, smudges/bleeding		1	Not attempted		0	15
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<p>3</p>	<p>Contd</p>	 <p>Full size template on Supporting Information on drop down and on last page of MS.</p>	<p>Total 15 marks</p>
<p>4</p>		<p>Products and packaging are described as being fit for purpose. Explain what this term means using examples to support your answer.</p> <p>You will be assessed on Quality of Written Communication in this question. [8 marks]</p> <p>Award for:</p> <ul style="list-style-type: none"> - Products designed for a specific purpose eg pencil sharpener. - Tested on target audience. - Quality. - Fulfilment of task-promise. - Ergonomics-comfortable and safe. - Anthropometrics. - Fulfil intended purpose. -Under and over-packaging. -Protect, preserve, promotion, place, price, transportation and information. 	

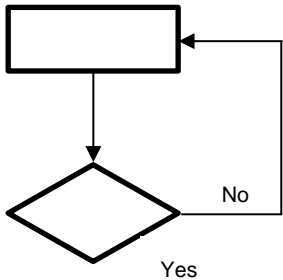
		<p>A fully detailed and comprehensive response that includes details of most of the points above. The answer is well-structured, with good use of appropriate design & technology terminology and showing a good grasp of grammar, punctuation and spelling.</p> <p>A good response that includes several of the points above. The answer is well-structured, with good use of appropriate design & technology terminology and showing a good grasp of grammar, punctuation and spelling.</p> <p>A fair response which refers to some of the points above. The answer is fairly well structured, with some use of design & technology terminology and with a small number of errors in grammar, punctuation and spelling.</p> <p>A response which contains very limited reference to any of the points above. The answer is vague or poorly structured, with little use of design & technology terminology and with a considerable number of errors in grammar, punctuation and spelling.</p> <p>A response which is poorly structured with no relevant examples. There is very little or no use of design technology terminology and with many errors in grammar, punctuation and spelling.</p>	<p><u>7-8</u></p> <p><u>5-6</u></p> <p><u>3-4</u></p> <p><u>1-2</u></p> <p>0</p>															
		<p>Must tick relevant points. Max 2 marks for relevant examples.</p>		<p>8</p> <p>Total 8 marks</p>														
5	a	<p>Colour render (shade) the toy train to show the different materials used for the parts listed below. [8 marks]</p> <p>Part A – The engine boiler should look like it is made from wood. Part B – The two windows should look like they are tinted. Part C – The two big wheels should look like they are made from shiny plastic. Part D – The two buffers should look like they are made from foam.</p> <table border="1"> <tr> <td>Part A - Grain effect, natural finish, wood colouring, end grain</td> <td>2</td> </tr> <tr> <td>Part B - Tinted effect-smoked/grey finish-highlights (any colour)</td> <td>2</td> </tr> <tr> <td>Part C - Shiny finish-tonal shading-dark to light-curved effect</td> <td>2</td> </tr> <tr> <td>Part D - Matt finish-dots-pitted finish-rings</td> <td>2</td> </tr> </table> <p>Award marks for: (4x2 marks) <u>PLACE INDIVIDUAL MARKS ON PAGE AS PER MMS.</u></p> <table border="1"> <tr> <td>High level: Consistently applied including special effects</td> <td>2</td> </tr> <tr> <td>Low level: Attempted but lacks detail or partial answer. (1 of 2 parts). Pencil only.</td> <td>1</td> </tr> <tr> <td>Not attempted or simply colour. Solid colour only</td> <td>0</td> </tr> </table>	Part A - Grain effect, natural finish, wood colouring, end grain	2	Part B - Tinted effect-smoked/grey finish-highlights (any colour)	2	Part C - Shiny finish-tonal shading-dark to light-curved effect	2	Part D - Matt finish-dots-pitted finish-rings	2	High level: Consistently applied including special effects	2	Low level: Attempted but lacks detail or partial answer. (1 of 2 parts). Pencil only.	1	Not attempted or simply colour. Solid colour only	0		<p>8</p>
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5	b	<p>Use thick and thin line emphasis technique on the drawing above to enhance the appearance of the train. [3 marks]</p> <table border="1"> <tr> <td>High level: Consistently applied-majority of correct lines</td> <td>3</td> </tr> <tr> <td>Medium level: Some mistakes or omissions</td> <td>2</td> </tr> <tr> <td>Low level: Confused-no logic</td> <td>1</td> </tr> <tr> <td>Not attempted</td> <td>0</td> </tr> </table>	High level: Consistently applied-majority of correct lines	3	Medium level: Some mistakes or omissions	2	Low level: Confused-no logic	1	Not attempted	0		<p>3</p> <p>Total 11</p>						
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			marks
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6	a	i	<p>Label the diagram above to complete the paper sizes. [3 marks]</p> <p>Award 1 mark for each:</p> <p>A6 A4 A2</p>	3						
6	a	ii	<p>Explain the relationship between the differences in sizes of the paper. [2 marks]</p> <p>Described in sizes, A series, A0 area of 1m², A0 largest size, A5 is twice as big as A6 etc. Double size. Number increases-size halves.</p> <table border="1" style="width: 100%;"> <tr> <td>High level: clear understanding</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Low level: some understanding</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Not attempted or incorrect</td> <td style="text-align: center;">0</td> </tr> </table>	High level: clear understanding	2	Low level: some understanding	1	Not attempted or incorrect	0	2
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Not attempted or incorrect	0									
6	b	i	<p>Evaluate the suitability of the material for this product. [2 marks]</p> <p>Readily available, good printing surface, easy to fold, easy to cut, relatively inexpensive, low unit cost. Positives of why card is suitable. Do not accept recycle or bio-degradable. Reference to manufacturing processes.</p> <table border="1" style="width: 100%;"> <tr> <td>High level: clear understanding</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Low level: some understanding</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Not attempted or incorrect</td> <td style="text-align: center;">0</td> </tr> </table>	High level: clear understanding	2	Low level: some understanding	1	Not attempted or incorrect	0	2
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6	b	ii	<p>List the five main print finishes which could be applied to the prospectus folder to improve its appearance. Two of these have been completed for you. List the other three. [3 marks]</p> <p>Award 1 mark for each:</p> <p>Varnishing/UV varnishing/spot varnishing. (accept only one varnish method) Foil blocking/foiling Laminating-Do not accept plastic film. Do not accept encapsulation.</p>	3						
6	b	iii	<p>The logo on the prospectus will be embossed. Explain this special printing effect. [2 marks]</p> <p>The embossing process raises part of the surface by applying about 5 Tonnes of pressure to a steel die or stamp onto a printed surface. This gives a visual and textured effect to the product. (Classroom method accepted using a card male and female form and press)</p> <table border="1" style="width: 100%;"> <tr> <td>High level: clear understanding</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Low level: some understanding</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Not attempted or incorrect</td> <td style="text-align: center;">0</td> </tr> </table>	High level: clear understanding	2	Low level: some understanding	1	Not attempted or incorrect	0	2
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6	b	iv	<p>A local school needs to buy a large number of the prospectus folders shown below.</p> <p>On the opposite page produce a flow chart describing how to make the folder shown above in quantity in industry. You must include a quality control stage.</p> <p>Use the following symbols at the relevant stages. [9 marks]</p> <div style="display: flex; justify-content: space-around; align-items: center; margin: 10px 0;"> <div style="border: 1px solid black; width: 150px; height: 60px;"></div> <div style="text-align: center;">↓</div> <div style="border: 1px solid black; width: 150px; height: 80px; transform: rotate(45deg);"></div> </div> <p>Logical sequence-but quality control could be after any process. Only a single QC required.</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>Start</p> <p><u>Print artwork</u></p> <p>QC ?</p> <p><u>Apply print finish-embossing</u></p> <p>QC ?</p> <p><u>Die cut –</u> Not craft knife</p> <p>QC ?</p> <p><u>Fold the sides.</u></p> <p>QC-Is it folded correctly?</p> <p><u>Assemble folder</u></p> <p>QC ?</p> <p>Finish</p> </div> <div style="width: 35%; text-align: center;"> <pre> graph TD Start([Start]) --> P1[] P1 --> P2[] P2 --> P3[] P3 --> P4[] P4 --> P5[] P5 --> D1{ } D1 --> P5 D1 --> P6[] P6 --> P7([Finish]) </pre> </div> </div>
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		<p><u>PLACE INDIVIDUAL MARKS ON PAGE AS PER MMS.</u></p> <ul style="list-style-type: none"> ● <table border="1"> <tr><td>Award marks for:</td><td></td></tr> <tr><td>Logical Sequence</td><td></td></tr> <tr><td>High level: All correct-logical sequence</td><td>3</td></tr> <tr><td>Medium level: Minor error to sequence or missing stage(s)</td><td>2</td></tr> <tr><td>Low level: Illogical sequence to manufacture</td><td>1</td></tr> <tr><td>Not attempted</td><td>0</td></tr> </table> ● <table border="1"> <tr><td>Use of symbols</td><td></td></tr> <tr><td>High level: All correct</td><td>3</td></tr> <tr><td>Medium level: Minor error</td><td>2</td></tr> <tr><td>Low level: Untidy or largely incomplete</td><td>1</td></tr> <tr><td>Not attempted or no flow chart.</td><td>0</td></tr> </table> ● <table border="1"> <tr><td>Quality Control Stage-loop</td><td></td></tr> <tr><td>Award 1 mark for loop</td><td>1</td></tr> <tr><td>Arrowhead pointing up</td><td>1</td></tr> <tr><td>Labelling 'Yes' and 'No' in correct position</td><td>1</td></tr> </table> <div style="text-align: center;">  </div>	Award marks for:		Logical Sequence		High level: All correct-logical sequence	3	Medium level: Minor error to sequence or missing stage(s)	2	Low level: Illogical sequence to manufacture	1	Not attempted	0	Use of symbols		High level: All correct	3	Medium level: Minor error	2	Low level: Untidy or largely incomplete	1	Not attempted or no flow chart.	0	Quality Control Stage-loop		Award 1 mark for loop	1	Arrowhead pointing up	1	Labelling 'Yes' and 'No' in correct position	1	<p>9</p> <p>Total 21 marks</p>
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7	a i	<p>Explain the meaning of the term 'smart material'. [3 marks]</p> <p>Smart materials have properties that react to changes in their environment. This means that one of their properties can be changed by an external condition such as temperature, light, pressure or electricity. This change is reversible and can be repeated many times. There are a wide range of different smart materials. Each offer different properties that can be changed. Eg Input-process-output described.</p> <table border="1"> <tr><td>High level: good understanding of smart materials-looking for reversible</td><td>3</td></tr> <tr><td>Medium level: Some understanding</td><td>2</td></tr> <tr><td>Low level: Confused or mistakes</td><td>1</td></tr> <tr><td>Not attempted or incorrect</td><td>0</td></tr> </table>	High level: good understanding of smart materials-looking for reversible	3	Medium level: Some understanding	2	Low level: Confused or mistakes	1	Not attempted or incorrect	0	<p>3</p>																						
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7	a	ii	<p>A thermochromic thermometer is shown below. Explain how a thermochromic thermometer works. [4 marks]</p> <p>Thermochromic materials change colour as the temperature changes. These are used on contact thermometers made from plastic strips and test strips on the side of batteries (where the heat comes from a resistor under the thermochromic film). They are also used as food packaging materials that show you when the product they contain is cooked to the right temperature.</p> <p>Thermochromic ink in a thermometer changes colour according to the temperature of a patient, and then goes back to its original black when the patient's heat is removed. The inks on this thermometer react to the temperature of a body and glow specific colours, making it easy and safe to use.</p> <table border="1"> <tr> <td>High level: Good understanding of a thermochromic thermometer. Must refer to body heat/temp and colour bands or bars or blocks or scale for 4 marks.</td> <td style="text-align: center;">3-4</td> </tr> <tr> <td>Medium level: Some understanding</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Low level: Confused or mistakes</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Not attempted or incorrect</td> <td style="text-align: center;">0</td> </tr> </table>	High level: Good understanding of a thermochromic thermometer. Must refer to body heat/temp and colour bands or bars or blocks or scale for 4 marks.	3-4	Medium level: Some understanding	2	Low level: Confused or mistakes	1	Not attempted or incorrect	0	4
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7	b	i	<p>Modern materials are used in many different graphic products.</p> <p>Explain why: [6 marks]</p> <p>Holographic film is used on the front of concert tickets</p> <p>3D effect when viewed at different angles. Proof ticket is genuine. Adds interest. Security. Authentic.</p>									
7	b	ii	<p>Corn starch is used to make food packaging</p> <p>Made from crops such as corn, potatoes which are high in starch. Replaces oil based packaging. Biodegradable and environmentally friendly. Food safe.</p>									
7	b	iii	<p>Polymorph is used for modelling in design and technology.</p> <p>A form of plastic which stays hard at room temperature but goes soft again at 60 degrees centigrade. Good for block modelling prototypes before making. Especially ergonomic examples.</p> <p>(3 x 2 marks)- <u>PLACE INDIVIDUAL MARKS ON PAGE AS PER MMS.</u></p> <table border="1"> <tr> <td>High level: Clear, well justified/good understanding</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Low level: Some understanding or confused</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Not attempted or incorrect</td> <td style="text-align: center;">0</td> </tr> </table>	High level: Clear, well justified/good understanding	2	Low level: Some understanding or confused	1	Not attempted or incorrect	0	6 Total 13 marks		
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			Total 85 marks for Section B									
			Total 120 marks for Question Paper									

