

GCSE 2004

June Series



Mark Scheme

Design and Technology: Graphic Products *(3543/Full Course Foundation)*

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

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The answers given in the following mark schemes are neither exhaustive nor exclusive. Candidates whose answers do not appear directly on the mark scheme, but who have demonstrated knowledge, understanding, or skills relevant to the question will receive appropriate credit for their answers.

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ASSESSMENT AND QUALIFICATIONS ALLIANCE
GENERAL CERTIFICATE OF SECONDARY EDUCATION

June Examination 2004

Design and Technology Graphic Products

Full Course Foundation Tier

Question 1 Data Representation

Bar Chart				
(a)	Accuracy (visual check)	three correct height \pm 1mm	3 marks	
		two correct	2 marks	
		one correct	1 mark	
		none correct	0 marks	(3 marks)
(b)	Colour	good, even, within borders	2 marks	
		some outside borders	1 mark	
		consistently outside borders/not attempted	0 marks	(2 marks)
(c)	Key	all three bars colours (hatching) match key	1 mark	
		incorrect	0 marks	(1 mark)

Total 6 marks

Question 2 Designing

Box 1	Decoration – Mountains			
	Three different good quality, relevant designs, well communicated	(3 x 2)	6 marks	
	Satisfactory designs, mountains suggested or implied	(pro rata 1 mark)		
	Not attempted	(pro rata 0 marks)	0 marks	(6 marks)
Colour	Used or <u>indicated</u>		1 mark	(1 mark)
Box 2	Logo			
	Good quality development of an idea, more than 2 sketches		3 marks	
	Limited evidence of development or all single line thickness		2 marks	
	One idea or no development		1 mark	
	Totally inappropriate/not attempted		0 marks	(3 marks)
Box 3	Embossing			
	Embossing indicated? Which feature? (Any previous drawing)		1 mark	
	Appropriate to design, justified by text or thick line/shadow/3D		1 mark	
	Not appropriate		0 marks	(2 marks)
Evaluation (Best Evidence)				
	Critical, relevant, justified		3 marks	
	Superficial, self congratulatory, or descriptive		2 marks	
	Labels		1 mark	
	Not attempted		0 marks	(3 marks)

Total 15 marks

Question 3 Presentation

(a)	Accuracy (any orientation – ‘landscape’ or ‘portrait’)			
	Both, 150 x 90 ± 2mm			2 marks
	Any one accurate	1 mark		
	Both incorrect	0 marks		(2 marks)
(b) (i)	Use of spec: pro rata, one mark per criteria, does not have to relate to sheet 3.			
	logo with A1C	4 x 1 mark		
	mountains			
	colours			
	embossing – evidence of raised surface, e.g. thick line emphasis, 3D effect etc.			(4 marks)
(ii)	Quality of Drawing:			
	Very good line quality, clear, neat, etc.	3 marks		
	Adequately drawn, some reasonable lines	2 marks		
	A fair attempt, lacks precision	1 mark		
	Scribble/Not attempted	0 marks		(3 marks)
(iii)	Combining Ideas			
	3 or 4 elements faithfully brought forward, can be repositioned	2 marks		
	1 or 2 elements brought forward	1 mark		
	Nothing brought forward (<i>different design</i>)	0 marks		(2 marks)
(iv)	Layout			
	Very effective, consistently good, e.g. spacing, proportion, good use of space, use of guide lines	5-4 marks		
	Satisfactory, sense of composition, adequate spacing, some imperfections			
	max 3 if no box outline	3-2 marks		
	An attempt but lacks clarity and/or poorly spaced, crowded	1 mark		
	Unrecognisable or not attempted	0 marks		(5 marks)
(v)	Colouring			
	Excellent quality, enhances drg, visual impact, e.g. good tonal control, very good block colouring	5 marks		
	Good, controlled use of media, some attempt at higher skills e.g. tone, block colour	4 marks		
	Satisfactory quality, some enhancement, (good monochrome max.)	3 marks		
	Poor quality, untidy/scribble, does little to enhance product	2 marks		
	An attempt – very poor, scribble	1 mark		
	No colour – line drawings only	0 marks		(5 marks)

(c) (i)	What is expected.		
	Reward appropriate information, e.g. bar code, ingredients, contents, expiry date		
	Safety – not toy, small parts, contamination.		
	Instructions – how to use items		
	Manufacturer – address		
	Contact details, recycling/environment		
	Symbols, animal testing, warning	1 mark	(1 mark)
	Explanation – Clear understanding, relevant to product	2 marks	
	Some understanding evident	1 mark	
	One word, no clarification	0 marks	(2 marks)
(ii)	What is expected.		
	Reward appropriate information, e.g. bar code, ingredients, contents, expiry date		
	Safety – not toy, small parts, contamination.		
	Instructions – how to use items		
	Manufacturer – address		
	Contact details, recycling/environment		
	Symbols, animal testing, warning	1 mark	(1 mark)
	Explanation – Clear understanding, relevant to product	2 marks	
	Some understanding evident	1 mark	
	One word, no clarification	0 marks	(2 marks)
			Total 27 marks

Question 4 Vacuum forming, enlargements & B.S.

(a) (i)	Thermoplastic	1 mark	(1 mark)
(ii)	e.g. PVC, HIPS, Polystyrene, polythene (PE), acrylic/ perspex (PMMA), polyester, polypropylene (PP) ... any thermoplastic. Not vinyl or styrene	1 mark	(1 mark)
(b)	Process of vacuum forming		
	Understanding of stages in order	3 marks	(3 marks)
	Sequence <i>e.g. heat (given), platen raised, vacuum pump on, blow, lower platen, remove</i>		
	Good understanding of the stages	3 marks	
	Limited understanding of the stages	2 marks	
	Poor understanding of the stages	1 mark	
	No written stages or no understanding (pictures only)	0 marks	
	Quality of sketches (even if wrong process or stage)		
	In same style	All 2D	1 mark
		Not in 2D	0 marks
		All in good proportion and aligned	2 marks
		Some in good proportion/aligned	1 mark
		Not in proportion	0 marks
		(E.g. mould size and plastic thickness)	(2 marks)
		Easy to understand diagrams	1 mark
		Difficult to understand diagram	0 marks
			(1 mark)
	Line Quality	Consistently neat, straight, thin etc.	2 marks
		Most neat, straight and thin	1 mark
		Untidy, poor, confused	0 marks
			(2 marks)
(c)	e.g. ease removal of moulding from mould/pattern		
	Good understanding, correct technical terms e.g. draft angle	2 marks	
	Some understanding	1 mark	
	Incorrect, not attempted	0 marks	(2 marks)
(d) (i)	Ensure constant quality, standards, check process/machines, zero defects	2 marks	
	An attempt, some understanding, not clear	1 mark	
	Not attempted, incorrect	0 marks	(2 marks)
(ii)	Reward any suitable method e.g. sampling, gauges, tolerance check, visual check, random samples	2 marks	
	An attempt, some understanding, not clear	1 mark	
	Not attempted, incorrect	0 marks	(2 marks)

Total 17 marks

Question 5 Enlargement & B.S.

- | | | | |
|-----|---|---------|-----------|
| (a) | Accurate outline successfully transferred, 1 square in. | 4 marks | |
| | Good attempt, one error | 3 marks | |
| | Fair attempt, some correct features e.g. lacks symmetry | 2 marks | |
| | An attempt, tree shape apparent | 1 mark | |
| | No relationship to example, not attempted | 0 marks | (4 marks) |
| | Hole, position and size compatible with example | 1 mark | |
| | Not attempted, incorrect size or position, <u>visual check</u> | 0 marks | (1 mark) |
| (b) | BS | | |
| | All leaders line (small gap) | | (1 mark) |
| | All consistent, neat and correct arrowheads | | (1 mark) |
| | All dimension lines solid, parallel, correct length, not touching | | (1 mark) |
| | All numbers, above line, centre position (90 x 80) | | (1 mark) |
| (c) | Scale 2:1 (only possible answer) | 1 mark | (1 mark) |

Total 10 marks

Question 6 Materials

- (a) Must relate to Typical Use given in question. (pro rata 5 x 1) 5 marks (5 marks)

e.g. - a thermoplastic, transparent, thin, easy to mould/form,
recyclable

- flat, easy to cut, good finish

- thermoplastic, translucent, readily available

- absorbs shock, good strength/weight, recyclable, biodegradable

- ease of cutting, lightweight, takes finishes

One word answers will not give reasoned response

- (b) e.g. heat causes the crystals in the film to change colour, seen on outside
by temp. marker, when cool crystals revert to 'black' and temp. bar
disappears. Reversible process

Good understanding, e.g. reversible, line appears to move
up/down scale

4 marks (4 marks)

Some understanding, general principles e.g. ref. inks, crystals,
pigment

3 mark

An understanding, basic terms – ref. to colour/temperature

2 marks

A fundamental knowledge, vague – how a thermometer works

1 mark

Incorrect, not attempted

0 marks

Total 9 marks

Question 7 - CAD/CAM

- (a) *Look for quality of communication of the CAD/CAM process*
- | | | |
|---|-----------|-----------|
| Well communicated, e.g. neat lines, easy to understand, good use of space, all stages recognisable etc. | 5-4 marks | |
| Less well drawn but conveys the information e.g. some lack of clarity, some omissions, average response | 3 marks | |
| An attempt, e.g. not completed, stages omitted, poor drgs, confused (max for non- CAD/CAM) | 2 marks | |
| A low level attempt e.g. minimum effort, very untidy | 1 mark | |
| Wrong process, scribble, very low level, incorrect | 0 marks | (5 marks) |
- Notes – (reward even if not CAD/CAM)
- | | | |
|--|-----------|-----------|
| Consistent, accurate, all features, notes | 4-3 marks | |
| Average notes and/or labels, no explanations | 2 marks | |
| Some relevant features named | 1 mark | |
| Incorrect not attempted | 0 marks | (4 marks) |
- (b) *Accept answers referring to quality, consistency, ease of updating of CAD database, library etc.*
- | | | |
|-------------------|---------|-----------|
| Clearly explained | 2 marks | |
| Less clear | 1 mark | |
| One word answer | 0 marks | (2 marks) |
- (c) (i) *Accept answers referring to quality, consistency, uniformity of CAM etc.*
- | | | |
|-------------------|---------|-----------|
| Clearly explained | 2 marks | |
| Less clear | 1 mark | |
| One word answer | 0 mark | (2 marks) |
- (ii) *Accept answers referring to costs, training, errors of CAM etc.*
- | | | |
|---------------------------------|---------|-----------|
| Clearly explained with examples | 2 marks | |
| Less clear, no examples | 1 mark | |
| One word answer e.g. expensive | 0 marks | (2 marks) |

Total 15 marks

Question 8 Environmental, Cultural, Social Issues

- (a) e.g. some suggestion of contamination, health risk, preserves scent, tamper proof, protects contents.
Do not reward reference to card decoration.
- | | | | |
|---------|--------------------------------------|-------------|-----------|
| REASONS | Correct statement, clearly justified | 2 x 2 marks | (2 marks) |
| | Unsupported statement | 2 x 1 mark | (2 marks) |
| | Not attempted, inappropriate reasons | 0 marks | |

(b) Must relate to These packages.

- | | | | |
|-----|---|--------|-----------|
| (i) | non-renewable | 1 mark | |
| | e.g. finite resource, oil based, plastics | 1 mark | (2 marks) |

- (ii) Backing Card: e.g. *unsightly, litter, bio-degradable, rot, decompose.*
- | | | | |
|--|--|---------|-----------|
| | Clearly reasoned, good understanding | 3 marks | |
| | Some understanding, not fully explained, | 2 marks | |
| | An attempt | 1 mark | |
| | Incorrect, not attempted | 0 marks | (3 marks) |

- Transparent Materials: *e.g. unsightly, litter, not bio-degradable, small animals.*
- | | | | |
|--|---|---------|-----------|
| | Clearly reasoned, good understanding | 3 marks | |
| | Some understanding, not fully explained | 2 marks | |
| | An attempt | 1 mark | |
| | Incorrect, not attempted | 0 marks | (3 marks) |

(c) e.g. *accept any suitable recycling image and reward the following features*



- Image:
- | | | |
|--|---------|-----------|
| 50% stated (must include % sign) | 1 mark | |
| Colour (black or green) | 1 mark | |
| good representation of symbol, shape, 'cyclic' etc | 3 marks | |
| adequate representation, loss of detail | 2 marks | |
| an attempt, some connection to correct symbol | 1 mark | |
| Incorrect. Not attempted | 0 marks | (5 marks) |

(d) (i) Advantage	e.g. <i>ref. to: environmental, preserves, resources etc.</i> <i>Do not accept 'cheaper'</i>		
	good understanding e.g. example given	2 marks	
	an attempt e.g. no example	1 mark	
	Not attempted, one word answer or rain forest	0 marks	(2 marks)
(ii) Disadvantage	e.g. <i>quality diminishes in proportion to amount of recycled material, colourless attractive, lower quality, bleeds, chemicals</i>		
	good understanding e.g. example given	2 marks	
	an attempt e.g. no example	1 mark	
	Not attempted, one word answer or strength	0 marks	(2 marks)
(e) (i)	With reference to contamination of food, toxic, germs	1 mark	
	Explanation of source of contamination or consequences for customer	1 mark	
	Not attempted	0 marks	(2 marks)
(ii)	Reasoned answer e.g. litter, vermin, health pollution etc. Reason and effect	2 marks	
	Limited, no reasons	1 mark	
	Unrelated to context	0 marks	(2 marks)
(iii)	Related to context, accept symbols on the packages, e.g. recycling logos, pictograms, BSI symbols	1 mark	(1 mark)

Total 26 marks**Total Paper 125 marks**