
DESIGN AND TECHNOLOGY

9705/33

Paper 3

October/November 2016

MARK SCHEME

Maximum Mark: 120

Published

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Section A

Part A – Product Design

1	(a) Suitable material:	<ul style="list-style-type: none"> - abs/polypropylene/acrylic/HIPS - appropriate hardwood for laminating/bending - aluminium alloy - mild steel (with finish) - stainless steel 	1	
	Reasons:	<ul style="list-style-type: none"> - can produce high quality finish - can be bent to required shape - will hold shape when hanging heavy clothing - look attractive in desired environment 	2×1	[3]
	(b) Description to include:			
	Quality of description:			
	- fully detailed		3–7	
	- some detail		0–2	
	- quality of sketches		up to 2	[9]
	(c) Explanation could include:			
	- change in process			
	- change in materials			
	- use of jigs, formers, moulds			
	- simplification of design			
	Quality of explanation:			
	- logical, structured		4–6	
	- limited detail		0–3	
	- quality of sketches		up to 2	[8]
	-			
				[Total:20]
2	Discussion should refer to:	<ul style="list-style-type: none"> - aesthetics – appeal/complexity against manufacturing possibilities - unit costs – target market – demand - processes – specific to product - consumer need for product - speed of response/lead time to sales - quantity consideration/batch production - competition/advertising 		
	Examination of issues:			
	- wide range of relevant issues		5–9	
	- limited range		0–4	
	Quality of explanation:			
	- logical, structured		4–7	
	- limited detail		0–3	[16]

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Supporting examples/evidence:

- specific products
 - specific marketing/commercial awareness
 - specific details of quantity production methods
- [4]**

[Total: 20]

- 3 (a)** Description of process:
- fully detailed 3–5
 - some detail 0–2
 - quality of sketches up to 2 7×2
- [14]**

- (b)** Hardening and tempered:
- ensures hard/sharp blade
 - reduces brittleness
 - relatively low cost, no need for possibly costlier higher carbon/specialist steel blades

Edged and veneered:

- attractive
- dimensionally stable
- reduced weight/cost
- environmentally friendlier

Vacuum formed:

- range of colours
 - quick process
 - no finishing required 3×2
- [6]**

[Total: 20]

Part B – Practical Technology

- 4 (a)** Application identified – e.g. modelling/construction/assembly with materials named **[3]**

- (b)** Explanation to include:
- possible preparation of materials/surfaces/work area
 - stages of application
 - possible health and safety issues
 - clear, fully detailed 8–10
 - most features described 4–7
 - limited detail 0–3
 - structure/communication 0–2
- [12]**

- (c)** Explanation could include:
- strength
 - speed
 - cost
 - clear, fully detailed 3–5
 - limited detail 0–2
- [5]**

[Total: 20]

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5 (a) (i)	Alloys named, e.g.: Brass copper (65–90%) zinc (10–35%) Bronze copper (78–95%) tin (5–22%) Stainless steel Iron (50%+), chromium (10–30%), plus smaller amounts of carbon, nickel, manganese, molybdenum Duralumin Aluminium (94%), copper (4.5–5%), magnesium (0.5–1.5%), manganese (0.5–1.5%)		
	One mark for alloy, two marks for materials	3×2	[6]
	(ii) Product identified e.g. screw, sink	1×2	[2]
	(iii) Explanation to include: – extends material range – specific qualities/properties produced		[4]
	(b) (i) Product [1] explanation up to 2		[3]
	(ii) Hardness – resistance to indentation or abrasion – appropriate test for indentation/abrasion – quality of communication	up to 3 up to 2	[5]
			[Total: 20]

6	Discussion should refer to: – materials – weight, strength – mechanisms – cranks, gearing, levers – friction – tyres, brakes, seat		
	Examination of issues: – wide range of relevant issues – limited range	5–9 0–4	
	Quality of explanation: – logical, structured – limited detail	4–7 0–3	[16]
	Supporting examples/evidence: – specific materials – specific cycle components – specific reference to function – racing, multi-terrain etc.		[4]
			[Total: 20]

Part C – Graphic Products

7 (a) (i)	accuracy construction interpenetration scale	2 2 2 1	[7]
(ii)	development construction correct outline accuracy	2 3 2	[7]

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- (b) Explanation should include:
- need for consistency/clarity
 - easily understood
-
- clear, fully detailed 4–6
 - limited detail 0–3

[6]

[Total: 20]

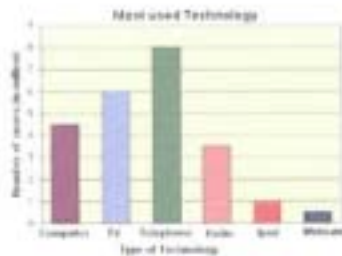
- 8 (a) Description could include:
- speed
 - ease of manipulation
 - store and send
- 2×2 [4]

- (b) (i) Description of process:
- fully detailed 4–6
 - some detail 0–3
 - quality of sketches up to 2
- [8]

- (ii) Description of process:
- fully detailed 4–6
 - some detail 0–3
 - quality of sketches up to 2
- [8]

[Total: 20]

9



- Pictograms** resemble what they signify
- Bar charts** are chart with rectangular bars with lengths proportional to the values that they represent
- Pie charts** circular chart showing proportion
- Ideograms** graphic symbol that reflects idea or concept, (also Chinese characters)

- Quality of explanation:
- logical, structured 4–5
 - limited detail 0–3
- [5×4]

[Total: 20]

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Section B

Analysis

Analysis of the given situation/problem. [0–5]

Specification

Detailed written specification of the design requirements.
At least five specification points other than those given in the question. [0–5]

Exploration

Bold sketches and brief notes to show exploration of ideas for a design solution, with reasons for selection.

- range of ideas [0–5]
- annotation related to specification [0–5]
- marketability, innovation [0–5]
- evaluation of ideas, selection leading to development [0–5]
- communication [0–5]

Development

Bold sketches and noted showing the development, reasoning and composition of ideas into a single design proposal. Details of materials, constructional and other relevant technical details.

- developments [0–5]
- reasoning [0–5]
- materials [0–3]
- constructional detail [0–7]
- communication [0–5]

Proposed solution

Produce drawing/s of an appropriate kind to show the complete solution.

- proposed solution [0–10]
- details/dimensions [0–5]

Evaluation

Written evaluation of the final design solution. [0–5]

[Total: 80]