#### UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Subsidiary Level and GCE Advanced Level

# MARK SCHEME for the October/November 2009 question paper for the guidance of teachers

## 9705 DESIGN AND TECHNOLOGY

9705/32

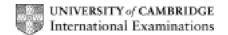
Paper 32 (Written 2), maximum raw mark 120

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

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#### **Section A**

## Part A – Product Design

- **1** (a) Appropriate material including:
  - aluminium/brass
  - acrylic/polyester resin
  - hardwood beech, yew

#### Reasons including:

- takes a good finish/easy to turn
- good aesthetic qualities
- easy to clean, not react to wax 2 × 1 [3]
- (b) Description to include:
  - appropriate method
  - marking, turning, forming (cast resin)

## Quality of description:

fully detailed 3–7some 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 4–6limited detail 0–3

Quality of sketches up to 2 [8]

[Total: 20]

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## 2 (a) Description of process

fully detailed 3–5some detail 0–2

Quality of sketches up to 2  $7 \times 2$  [14]

### (b) Comb/finger joint

- strong joint/resist stress
- · good gluing area
- can be attractive

## Vacuum forming

- one piece production/very quick
- even wall thickness
- waste reused
- · complex shapes formed

#### Casting

- no wastage
- good structural quality
- quick production, minimal assembly and machining 3 × 2

[Total: 20]

## 3 Discussion could include:

#### Cultural issues

- avoid offence
- target needs and wants

#### Ethical issues

- appropriate product
- targeting/green issues

#### Economic climate

- pricing/promotion/placement strategies
- target market research/value for money

#### Examples/evidence could be

- symbols/religion
- cultural traditions
- possible inappropriate products e.g. 'toy guns'
- excess packaging
- recycled materials or protected species (e.g. timber/fur)
- price reduction examples, complexity/unnecessary product

#### Examination of issues

•	wide range of relevant issues	4–8
•	limited range	0–3

## Quality of explanation

•	logical, structured	4–8
•	limited detail	0–3
Sup	oporting examples/evidence	4

[Total: 20]

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## Part B - Practical Technology

4 (i) Use correct rule/watch fingers Use mat Care/patience/do not attempt to cut thick sheet

(ii) Use holder/care from heated parts
Fume awareness
Goggles if carrying out lot of component soldering/solder removal

(iii) Hold sheet correctly Fix tool, correct speed Chuck key/goggles

(iv) Appropriate ventilation Keep off skin/cyano-acrylates Do not ingest/protect eyes (plastic solvents)

(v) Hot component/machine Avoid overheating/fumes Use gloves when handling/forming

(vi) Appropriate ventilation/dust extractionUser wear maskEye protection if used on abrading machine

(vii) Secure tool/work-piece Correct speed Goggles/hair tied back

For **five** safety precautions described in detail up to 3 marks Quality of communication  $5 \times 1$ 

 $5 \times 4$  [20]

[Total: 20]

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5 (a	a) N	lame of	product	5 × 1 mark		[5]
(b	o) E	Explanat	ion of suitability	5 × 3 marks		[15]
						[Total: 20]
6 (a	a) (i	i) Resi	stance to surface marking	g/abrasion		
	(ii	i) Resi	stance of a material to ter	nsile loading (pulling/stretchir	ng forces) 2 × 2	[4]
(b	<b>o) (</b> i	,	Iness test described lity of sketch	4 1		
	(ii	,	sile test described lity of sketch	4 1		[10]
(с	-	-	f explanation ate examples	4 maximum 2		[6]
						[Total: 20]

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	Part C – Graphic Products					
7	(a)	Correct front elevation 4 Correct sectional view 5 Accuracy/line quality 3		[12]		
	(b)	Discussion could include:				
	<ul> <li>portable disc drives/USB</li> <li>global transfer/sharing of design files (leading car companies)</li> <li>internet databases e.g. anthropometric data</li> </ul>					
		Examination of issues 3 Quality of explanation 3				
		Supporting examples/evidence 2		[8]		
				[Total: 20]		
8	(a)	Correct isometric/overall shape/proportion Isometric circles Twice full size	3 1	1401		
		Accuracy quality of line-work	3	[10]		
	(b)	Understanding of perspective Quality of explanation Use of examples	4 4 2	[10]		
				[Total: 20]		
9	Des	scription of product	2			
	Exp	<ul><li>olanation of changes</li><li>detailed, fully explained</li><li>limited detail</li></ul>	4–7 0–3			
	Exp	olanation of reasons for changes  detailed, fully explained	4–7			
		limited detail	0–3			
	Qua	ality of communication	4	[20]		
				[Total: 20]		

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