

## **MARK SCHEME for the October/November 2008 question paper**

### **9705 DESIGN AND TECHNOLOGY**

**9705/03**

Paper 3 (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.

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## Section A

### Part A – Product Design

<b>1</b>	<b>(a)</b> description of process			
	- fully detailed	3–5		
	- some detail	0–2		
	quality of sketches	up to 2	7 x 2	[14]
	<b>(b)</b> injection moulding			
	- simple design to be repeated			
	- easily change identification letter/number			
	- accurate/good finish			
	die casting			
	- good finish			
	- textured			
	- waste can be re-used			
	- simple shape, easy to remove from mould			
	laminating			
	- low cost procedure			
	- variable thicknesses produced			
	- strong, can support weight			
	- easily repeated		3 x 2	[6]
				<b>[Total: 20]</b>
<b>2</b>	<b>(a)</b> appropriate material including:			
	- aluminium			
	- acrylic or more flexible plastic			
	- specific hardwood or softwood			
	- plywood/mdf		1	
	reasons including:			
	- takes a good finish/easy to form/join			
	- attractive			
	- able to flex		2 x 1	[3]
	<b>(b)</b> description to include:			
	- appropriate method			
	- shaping, joining			
	- bending			
	quality of description:			
	- fully detailed	3–6		
	- some detail	0–2		
	quality of sketches	up to 2		[8]

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- (c) explanation could include:
- change in process
  - change in materials
  - use of jigs, formers, moulds
  - simplification of design

quality of explanation:

- logical, structured 4–7
- limited detail 0–3

quality of sketches up to 2 [9]

**[Total: 20]**

**3 2 D models**

example could be: template/profile/specific project 1

computer modelling

example could be: use of software e.g. ProDesktop, Autodesk, specific project 1

3D mock ups

example could be: proportional models, handle shapes 1

scaled prototype

example could be: car, working model for consumer testing prior to production 1

quality of explanation

- logical, fully detailed 3–4
- limited detail 0–2 4 x 5

**[Total: 20]**

**Part B – Practical Design**

- 4 (a)** rotary motion [1]  
clear sketch indicating correct method of achieving motion [3]  
clear labelling [1]

- (b)** reciprocating motion (accept linear) [1]  
clear sketch indicating correct method of achieving motion [3]  
clear labelling [1]

- (c)** oscillating motion [1]  
clear sketch indicating correct method of achieving motion [3]  
clear labelling [1]

- (d)** reciprocating motion (accept linear) [1]  
clear sketch indicating correct method of achieving motion [3]  
clear labelling [1]

**[Total: 20]**

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5	wood to wood (interior use)		
	PVA, Resin W		[1]
	appropriate example		[1]
	area cleaned		
	spread with brush/applicator		
	hold with clamps min 30 mins		
	wipe clear excess		
	full description including most of features above		[3]
	wood to wood (exterior use)		
	PVA exterior use, Cascamite		[1]
	appropriate example		[1]
	area cleaned, glue mixed		
	spread with brush/applicator		
	hold with clamps min 2 hours		
	wipe clear excess/ensure no gaps/avoid skin contact		
	full description including most of features above		[3]
	metal to metal		
	epoxy resin, araldite		[1]
	appropriate example		[1]
	area cleaned/ degreased, glue mixed		
	spread with brush/applicator		
	hold for 4 – 6 hours		
	wipe clear excess/avoid skin contact		
	full description including most of features above		[3]
	plastic to plastic		
	tenso cement, PVC weld		[1]
	appropriate example		[1]
	area cleaned, glue mixed		
	spread with brush/applicator		
	hold for min 30 mins		
	avoid skin/eye contact/well ventilated area		
	full description including most of features above		[3]
	plastic to wood		
	impact adhesive/hot glue gun		[1]
	appropriate example		[1]
	area cleaned,		
	spread with brush/applicator		
	ensure accurate positioning/immediate contact		
	avoid skin contact/heat/fumes		
	full description including most of features above		[3]
			[5 x 4]
			<b>[Total: 20]</b>

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- 6 (a) toughness – resistance to sudden impact [2]  
ductility – ability to be drawn into wire [2]
- (b) (i) material [1]  
example [1]
- (ii) material [1]  
example [1]
- (c) description of impact testing system  
fully detailed 3–4  
limited detail 0–2 [4]
- (d) discussion could include:  
manufacturing possibilities  
new materials  
broader product possibilities  
rapid production to meet market demand
- issues raised 3  
quality of discussion 3  
examples introduced 2 [8]

**[Total: 20]**

### Part C – Graphic Products

- 7 correct planometric/quality/scale [4]  
detail - door/walls [2]  
- bed [3]  
- bedside unit [2]  
- wardrobe [3]  
- desk [3]  
- sink unit [3]

**[Total: 20]**

- 8 (a) correct elevation  
- handle 2  
- intersection handle/head 2  
- face 4  
- line quality/construction 2 [10]

- (b) torch head  
- correct construction 4  
- shape/accuracy 3 [7]

- handle  
- construction 1  
- shape/accuracy 2 [3]

**[Total: 20]**

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- 9 draft outline:  
understanding of topic  
- fully detailed 3–4  
- limited detail 0–2  
clarity/efficiency of instruction of outline 3  
layout/method of giving instruction 3

[2 x 10]

**[Total: 20]**