

## **MARK SCHEME for the October/November 2006 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 students, 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.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

The grade thresholds for various grades are published in the report on the examination for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses.

- CIE will not enter into discussions or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the October/November 2006 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

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## Section A

### Part A – Product Design

1 (a)	appropriate material including: <ul style="list-style-type: none"> <li>- Aluminium / mild steel / other suitable metal</li> <li>- Acrylic / other suitable plastic</li> <li>- hardwood</li> </ul>	1	
	Reasons including: <ul style="list-style-type: none"> <li>- takes a good finish / easy to form</li> <li>- attractive</li> </ul>	2	[3]
(b)	description to include where appropriate: <ul style="list-style-type: none"> <li>- marking;</li> <li>- shaping;</li> <li>- joining;</li> <li>- assembly;</li> <li>- finish.</li> </ul> quality of description: <ul style="list-style-type: none"> <li>- fully detailed</li> <li>- some detail,</li> </ul> quality of sketches	3 - 6 0 - 2 up to 2	[8]
(c)	explanation could include: <ul style="list-style-type: none"> <li>- change in process;</li> <li>- change in materials;</li> <li>- use of moulds, formers, stamping tools;</li> <li>- simplification of design.</li> </ul> quality of explanation: <ul style="list-style-type: none"> <li>- logical, structured</li> <li>- limited detail,</li> </ul> quality of sketches	4 - 7 0 - 3 up to 2	[9]
			[Total: 20]

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**2** Discussion should include:

- (a) and (b) material choice /cost
- functional / aesthetic requirements
- suitability for environment

overall comprehension and interpretation 2

examination of issues up to 6 marks

- broad range 4 - 6
- limited 0 - 3

quality of explanation up to 8 marks

- detailed, logical 6 - 8
- some detail 3 - 5
- limited, 0 - 2

supporting examples / evidence up to 4 marks

[Total: 20]

**3 (a)** description of process including:

Face plate turning: preparation, attachment, tools used, finishing.

Rotational Moulding: split mould, powder plastic, rotation in 2 axis, heat.

Pressing: male/female formers, locating steel, high speed, huge force,

- fully detailed 3 - 5
- some detail, 0 - 2

quality of sketches up to 2 7 x 2 [14]

**(b)** face plate turning

- speed / one process
- Accurate / high quality finish

Rotational moulding

- Hollow product / little waste
- Many produced from one mould

pressing

- Very quick operation
- High quality finish
- accurate

3 x 2 [6]

[Total: 20]

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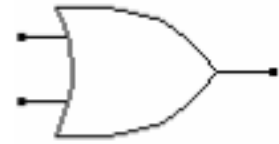
**Part B – Practical Design**

<b>4 (a)</b>	three examples, one from each of three classes of lever MA well explained		3 x 3	[9]
<b>(b)</b>	energy efficiency calculation example		2 1	[3]
<b>(c) (i)</b>	well explained clear sketches		3 2	[5]
<b>(ii)</b>	product clear description	eg. train door closing device industrial clamp	1 2	[3]
				[Total: 20]
<b>(a)</b>	for four materials	properties applications	4 x 2 4 x 1	[12]
<b>(b)</b>	understanding of new materials examples explanation of effect on product design / manufacture		2 2 4	[8]
				[Total: 20]

6 (a) V AND



W OR



X Exclusive OR (XOR)



Y NAND



Z NOR



Name of gate

1 mark

1 x 5

Symbol

1 mark

1 x 5

[10]

(b) appropriate examples (accept analogue to digital convertors)

e.g. vdu / TV screen (CRT)

video – digital recordings

sound (crystal microphone) – digital

examples

1 x 2

understanding of purpose / function

6

quality of explanation

2

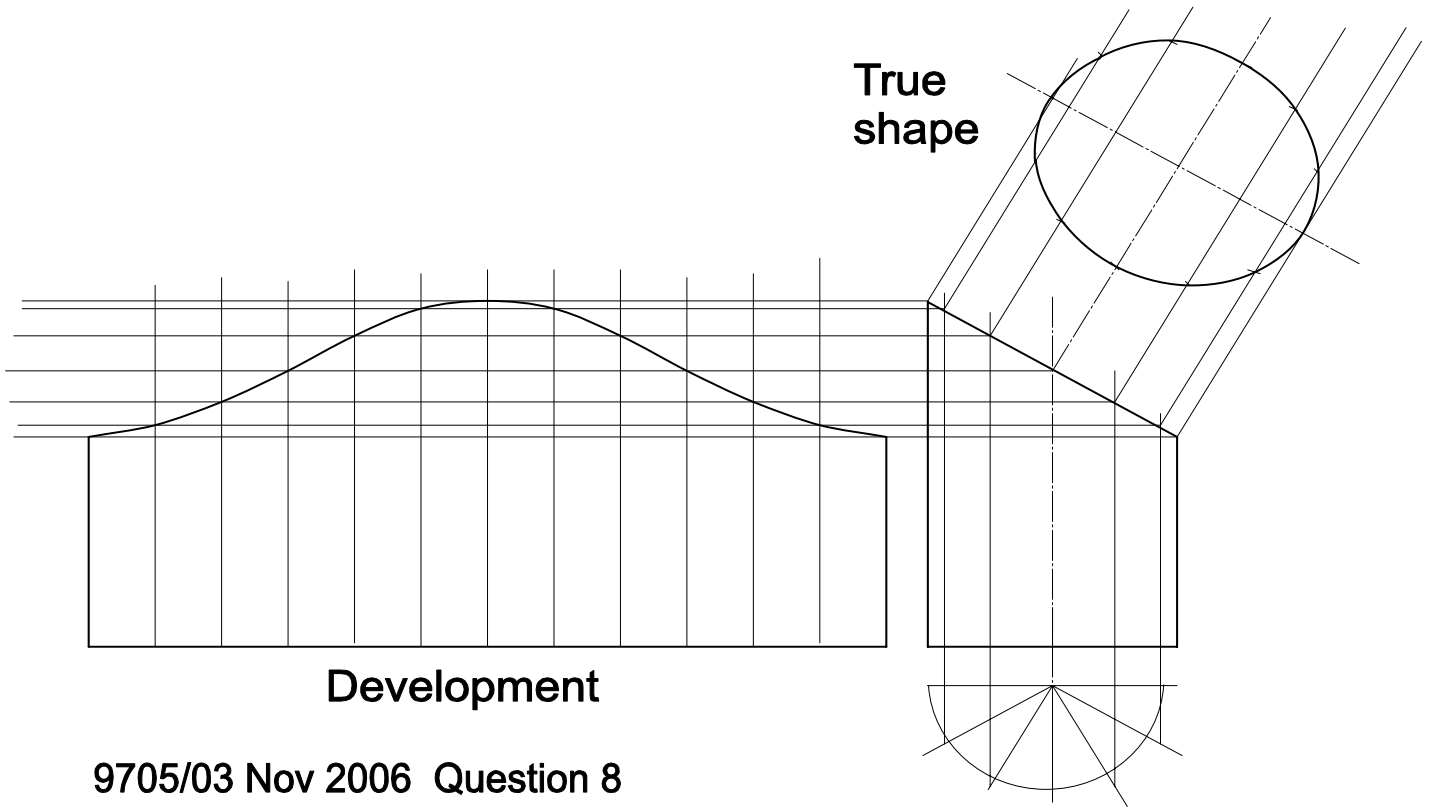
[10]

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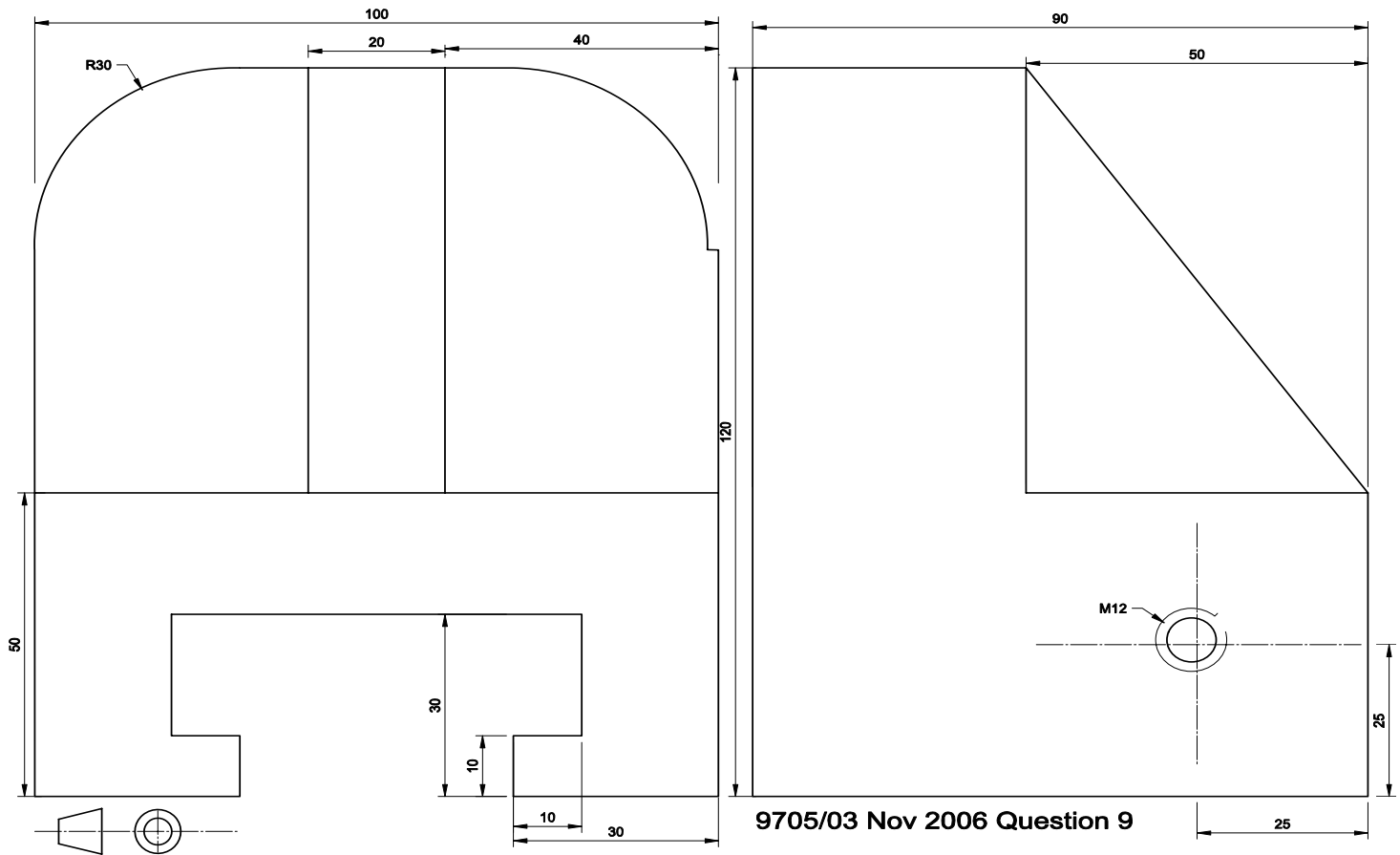
Part C – Graphic Products

<b>7 (a)</b>	scale	2		
	correct two point perspective	3		
	base position	2		
	column	2		
	table	3		
	line quality	3	[15]	
<b>(b)</b>	wood rendering	3		
	polished steel	2	[5]	
			[Total: 20]	
<b>8 (a)</b>	appropriate scale	2		
	net main body	5		
	true shape	3	[10]	
<b>(b)</b>	appropriate mechanism	4		
	working potential / connection details	4		
	quality of communication	2	[10]	
			[Total: 20]	
<b>9 (a)</b>	<b>(i)</b>	correct View A	3	
		correct view B	2	
	scale	1		
	symbol	1	[7]	
<b>(ii)</b>	fully dimensioned	3	[3]	
<b>(b)</b>	<b>(i)</b>	detailed explanation	4	
		example	1	[5]
<b>(ii)</b>	detailed explanation	4		
	example	1	[5]	
			[Total: 20]	



Development

9705/03 Nov 2006 Question 8



9705/03 Nov 2006 Question 9

Questions 8 and 9 not to scale (hard copy provided)