CAMBRIDGE
INTERNATIONAL EXAMINATIONS

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GCE Advanced Subsidiary Level and GCE Advanced Level

MARK SCHEME FOR the November 2002 question papers

9705 Design and Technology

9705 /1 Paper 1 (Written 1), maximum raw mark 120

9705 /3 Paper 3 (Written 2), maximum raw mark 120

These mark schemes are published as an aid to teachers and students, to indicate the requirements of the examination. They show the basis on which Examiners were initially instructed to award marks. They do not indicate the details of the discussions that took place at an Examiners' meeting before marking began. Any substantial changes to the mark scheme that arose from these discussions will be recorded in the published *Report on the Examination.*

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.*

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UNIVERSITY of CAMBRIDGE
Local Examinations Syndicate

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INTERNATIONAL EXAMINATIONS

NOVEMBER 2002

GCE Advanced Subsidiary Level

MARK SCHEME

MAXIMUM MARK : 120

SYLLABUS/COMPONENT :9705 /1

DESIGN AND TECHNOLOGY
(WRITTEN 1)

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Section A

			Detail Mark	Mark on script	Total Mark
1	Any from nuts and bolts, screws, two-piece snap fittings etc.		3 x 1	3	
2	a) Ductile, malleable, very good electrical conductor. (any two).		2 x 1	2	
	b) Plasticised PVC.		1	1	
3	Good description of property linked to example if possible. Properties such as – non corroding, does not tarnish, durable, natural finish or range of finishes available etc.		4 x 2	8	
4	(i)	Accurate sketch of gears	2		
		Good descriptive notes to explain change of angle through 90	1		
			1	4	
		Suitable application.			
	(ii)	Accurate sketch of gears	2		
		Good descriptive notes to explain change of movement from rotary to linear.	1		
		Suitable application.	1	4	
5	For each method – Good description which covers the main aspects of storing, harnessing and generation.				
	(i)	Tidal	3	3	
	(ii)	Hydroelectric	3	3	
	(iii)	Wave	3	3	
6	(i)	Time – available, start and finish times, scheduling, costing etc.	3	3	
	(ii)	Facilities – space, equipment, tools etc.	3	3	
	(iii)	Materials – ease of working, health & safety issues, cost etc.	3	3	40

Section B

7a	Part A – Acrylic (any suitable) Part B – Mahogany (any suitable)	**1** **1**	**2**	
7b	Excellent sketching techniques shown. All details of the preparation described. All stages covered and in order. Tools and machines identified.	**8-10**		
	Sketching of a good standard. Suitable details of the preparation of materials given. Most stages identified and in reasonable order. Majority of tools and machines named.	**4-7**		
	Basic sketching techniques used. Limited details of preparation. Only a few stages considered with limited knowledge of tools and equipment.	**0-3**	**10**	
7c	Suitable method shown – possibly slots, raised insert etc. Feasibility. Adequate description of a method supported by good sketching.	**1** **1** **2**	**4**	
7d	Suitable modification/shaping shown with clear detailed sketch. Shaping. Sketching	 **2** **2**	 **4**	**20**
8a	Aluminium – advantages are – needs no finish, lightweight etc. Limitations – difficult to join. Mild steel – advantages are – easy to join, cost effective etc Limitations are – heavy, needs protection etc.	**1** **1** **1** **1**	 **4**	
8b	Any suitable sensible suggestion which could be – easy to join at right angles, ability to rest top onto flat surfaces etc..	**2 x 2**	**4**	
8c	Excellent sketching techniques shown. All details of the manufacture described. All stages covered and in order. Tools, machines and materials identified.	**7-8**		
	Sketching of a good standard. Suitable details of the manufacture given. Most stages identified and in reasonable order. Majority of tools, machines and materials named.	**3-6**		
	Basic sketching techniques used. Limited details of manufacture. Only a few stages considered with limited knowledge of tools and equipment.	**0-2**	**8**	
8d	Suitable modification shown with clear detailed sketch. Pivot mechanism – function, feasibility, construction. Sketching	 **3 x 1** **1**	 **4**	

9a	Four relevant points – e.g.. ease of use, safety in use, ability to pick-up from variety of surfaces, lightweight, cost etc.	**4 x 1**	**4**	
9b	Excellent sketching techniques shown. Two different ideas shown. All details of the construction described. Correct materials, tools and machines identified.	**7-8**		
	Sketching of a good standard. Two different ideas shown Suitable details of the construction given. Majority of materials, tools and machines named.	**3-6**		
	Basic sketching techniques used. Two similar or even one idea only. Limited details of construction. Only a few details of materials, tools or equipment shown.	**0-2**	**8**	
9c	All stages considered in detail and presented in correct order.	**7-8**		
	Most aspects considered in some detail and ordered.	**3-6**		
	Basic outline described.	**0-2**	**8**	**20**

Section C

10a From: safety, interest, physical activity, colour, range of activity, maintenance, cost, durability etc. **4 x 1** **4**

10b For any two of the parts of the equipment the discussion should involve reference to different materials and could involve:

- Safety
- Construction
- Finishing
- Assembly
- Corrosion
- Colour
- Etc

Critical examination of issues - up to 3 marks
Quality of explanation - up to 3 marks
Supporting examples/evidence - up to 2 marks **2 x 8** **16** **20**

11a Four suitable requirements – safe, size, interest, colour, construction, etc **4 x 1** **4**

11b Any three advantages – colour, warmth, ease of construction, finishing etc. **3 x 1**
Any three limitations – splinters, grain weaknesses, time to finish, weight etc. **3 x 1** **6**

11c (i) Suitable toy selected. **1**
Sketch of toy. **2**
Materials stated. **1** **4**

(ii) For basic outline of process using competent annotated sketches and limited awareness of moulds, machinery etc. **0-3**

For detailed outline of process showing greater understanding of above and good annotated sketches. **4-6** **6** **20**

12a	Wooden laminated could be – beech, birch, ash, elm etc. Metal tube could be – aluminium, steel.	2 x 1	2	
12b	Candidates should provide a discussion which focuses on the advantages and limitations of the selected materials. Key points would be:			
	Laminate material: Any two advantages – grain structure, bends easily, steams well, finishing etc.	2		
	Any two limitations – splinters, grain weaknesses, time to finish, etc.	2		
	Tubular material: Any two advantages – bends easily, malleable, strength, finish, easily joined.	2		
	Any two limitations – weight, needs surface finish etc.	2	8	
12c	Excellent sketching/notes shown. All details of the manufacture described. Tools and machines identified.	4-5		
	Sketching/notes of a good standard. Suitable details of the manufacture given. Majority of tools and machines named.	2-3		
	Basic sketching/notes used. Limited details of manufacture. Limited knowledge of tools and equipment.	0-1	5	
12d	Relevant description of form – curved frame, smaller cross-sections etc.			
	Critical examination of issues - up to 2 marks Quality of explanation - up to 2 marks Supporting examples/evidence - up to 1 marks	5	5	20