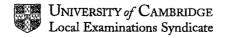


NOVEMBER 2002

GCE Advanced Level

MAXIMUM MARK: 120 SYLLABUS/COMPONENT: 9705/3 DESIGN AND TECHNOLOGY (WRITTEN: 2)



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Section A

Part A - Product Design

1 appropriate material including: (a) aluminium mild steel appropriate wood laminate Reasons including: strength comfort 2 [3] (b) description to include: appropriate method; shaping; forming; drilling. quality of description: - fully detailed 3 - 6 some detail, 0 - 2 quality of sketches up to 2 [8] explanation could include: (c) change in process; change in materials; use of templates, jigs, formers; simplification of design. quality of explanation: - logical, structured 4 - 7 limited detail, 0 - 3

quality of sketches

[Total: 20]

[9]

up to 2

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2	(a)	examples could include:		
		seat height;leg roomsteering wheel position;head rest		
		for four examples	3 x 4	. [12]
	(b)	explanations could include:		
		 physiological – seat angle force required to turn wheel; psychological – shape: colour; room; interior quality. 		
		For two explanations	4 x 2	[8]
				[Total: 20]
3	(a)	requirements could include:		**;
		 durability; vandal proof; strength; finish; appearance; comfort. 		
	For f	ive requirements (qualified statements	s) 1 x 5	[5]
	(b)	appropriate design construction quality of sketch	3 1 up to 2	[6]
	(c)	appropriate material including:aluminiummild steelappropriate wood	1	
		Reasons including: - strength; - comfort; - appearance.	2	[3]
	(d)	understanding of aesthetics	3	
		quality of explanation	3	[6]
				[Total: 20]

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Part B - Practical Design

4 (a) description of process	4.	(a)	descrip	otion of	process
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fully detailed

3 - 5

some detail.

0 - 2

quality of sketches

up to 2 7 x 2

[14]

(b) die casting:

- complex shape;
- quality finish;
- can be repeated;

extrusion:

- little wastage:
- once set up, vast production runs;
- reliable dimensions;

blow moulding:

- once set up, vast production runs;
- complex shape;
- speed of production.

3 x 2

[6]

[Total: 20]

explanation: monocoque - shell structure 5 (a)

frame - components

2

examples: egg;

pylon

2

graphic method (create parallelogram) 1 x 2 (b)

Correct answer 10.8 N, 10.4 N (+or- .3)

1 x 2

[4]

[4]

(c) understanding may include:

capital letters for spaces between forces;

lower case on vector diagrams

2

2

reference to forces / framework diagram

sketch/s

2 [6]

(d) tray: ribs, fold over top

bookshelf:

brace

bolted structure:

gusset plate

2 x 3 [6]

[Total: 20]

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R = R1 X R2(a) R1 + r21 220 32 1 6.875K Ω 1 (or calculation leading to correct answer 3 marks) [3] (b) diode: suppress noise and back emf.s; steer electronic signals; convert ac to dc in a rectifier circuit. Strain gauge: wires stretch – resistance changes Sensor in structures 2 x 2 **Explanations Applications** 1 x 2 [6] (c) digital devices - inputs and outputs either (i) logic 0 or logic 1 2 (ii) **NAND** 0 0 1 0 1 1 1 0 1 1 1 0 **OR** 0 0 0 0 1 1 1 0 1 1 NOR 0 0 1 0 1 0 1 0 0 1 mark for symbol for each;

2 marks for truth table

[Total: 20]

[9]

6

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Part C - Graphic Products

7	correct appro-	ct exploded view ct isometric sketch x twice full size y of linework ll shape / proportion		2 2 1 3	
	(each	component 1, 2 for main arm) thin line technique		9	,
				[Total	20]
8	(a)	pyramid; - accuracy (inc true length) - correct net - tabs	2 4 1	- N	
	·	cone: - accuracy - correct net - tabs	2 5 1	.2	[15]
	(b)	description could include:		ν:	`;
		templates;cutters/creasers;assembling.			
		Quality of description up to 5 marks			[5]
				[Total	: 20]
9	(a)	considerations could include; - language; - shock value? - Print volume; - Audience.			8 1
		For four considerations (qualified state	ments)	1 x 4	[4]
	(b)	appropriate symbol quality monochrome		4 3 1	[8]
	(c)	appropriate unit dimension folding/disassembly		3 1 2	101
		communication		2	[8]
				[Total	: 20]

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Section B

Questions 10, 11, 12

(A)	Analysis		5	[5]
(S)	Specification		5	[5]
(1)	Ideas	range annotation related to specification marketability selection / rejection of ideas communication	5 5 5 5 5	[25]
(D)	Development	clear development of selected idea/s reasoning materials construction communication	5 5 3 7 5	[25]
(P)	Proposed Solution details / dimensions	•	10 5	[15]
(E)	Evaluation		5	[5]
(T)	Total			[80]