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Centre Numbe	3
	12.0
Candidate Number	13

Candidate Number					

General Certificate of Secondary Education 2014

Technology and Design

Unit 3: Product Design



[GTD31]

TUESDAY 3 JUNE, AFTERNOON

GTD31

TIME

1 hour.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

Write your answers in the spaces provided in this question paper.

Questions which require drawing or sketching should be completed using an HB pencil. All other questions must be completed in blue or black ink.

Do not write with a gel pen.

Answer all eight questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 80.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

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			Answer all questions		Examine Marks	r Only Remark
1	(a)		w moulding and injection moulding are two common industrial nufacturing processes used to produce plastic components.		Marks	Kemark
		(i) \	Which process is considered as a reforming process?			
				_ [1]		
		(ii)	Which process is considered as a deforming process?			
				_ [1]		
	(b)	(i)	Outline three key features or stages of the blow moulding process.			
			1			
			2			
			3			
				_ [3]		
		(ii)	Outline three key features or stages of the injection mouldin process.	g		
			1			
			2			
			3		Total Que	stion 1
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2 Manufacturing practices involve the	use of machines and power tools.
State two applications/uses of each	of the following machines.
Circular Saw	
1	
	[1]
2	
	[1]
Milling Machine	
1	
	[1]
	[1]
Planer	
1	
	[1]
	[1]
2	
	[1]
Lathe	
1	
	[1]
2	
2	
	[1]
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3 Fig. 1 shows an extension ladder manufactured from aluminium alloy.



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Fig. 1

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(a) State why metals are alloyed.

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		-,		
	1.			
(u)	anthropometric data.			
(d)	Outline two design features of the ladder which are based on			
	[2			
	markings.			
(c)	State the advantage of purchasing a ladder with the Kitemark or CE			
	3[3	3]		
	1	_		
	material for the ladder.		Marks	Remark
(b)	State three properties of aluminium alloy which make it a suitable			er Only

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(a)	Outline what is meant by Intellectual Property.		
•			
		[2]	
		[4]	
b)	Individuals or companies often apply for copyright, trademarks or patents. Give a brief explanation of each of the following:		
	CopyrightTrademarks		
	Patents		
	Copyright		
		[2]	
	Trademarks		
		[2]	
	Patents		
		[2]	
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	is r	ompany engaged in the manufacture of gardening equipment eordering stock. The stock is reordered using the just-in-time cess.	_	Examiner Only Marks Rema
	(i)	Give two reasons for using the just-in-time process.		
		1		
		2		
			_ [2]	
	(ii)	The company uses standardised components.		
		Outline two features of this industrial practice.		
		1		
		2	[2]	
(h)	F: a			
(6)	_	. 2 shows a sketch of a wheelbarrow manufactured by the npany.		
(5)	_			
(5)	_	npany.		
(2)	_	npany.		
(5)	_	body – galvanised steel		
(5)	con	body – galvanised steel Fig. 2	_ [1]	
(2)	con	body – galvanised steel Fig. 2	_ [1]	

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g Learning Researching i			[1]		
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y Learning Rewarding I	(iii)	Name a manufacturing process which would be used to shape	the		
D GG		body.			
COS Researching Learning			[2]		
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6				ured component is shown in lensions and their tolerance.	Fig. 3. The Examiner Only Marks Remark
	←		90 ±0.03		Dia 50 ±0.02
		. — - — ·			
			(i)	nsions in mm (ii) ig. 3	
	(a)		culate the maximum and n given dimensions.	ninimum acceptable values f	or each of
		(i)	Maximum	Minimum	[1]
		(ii)	Maximum	Minimum	[1]
	(b)		ing sample testing of the called	components it was found that	t 10% were
		(i)	Explain what is meant by	sample testing.	
					[2]
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			_ [1]		
	2				
	· _		[1]		
(c)		line two characteristics of quality assurance.			
			_ [1]		
	(iii)	Outline one method the company could use to reduce this percentage.			
			_ [1]		
		this percentage reduced.			
		Give one reason why the quality control department would wa	ant		
	(ii)	The quality control department demanded that this percentag should be reduced.	е	Examir Marks	ner Only Remar

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7	Fre idea		nd sketches are frequently used in the communication of design		Examiner Marks R	Only emark
	(a)	(i)	Give one reason why it is important to produce good freehand sketches.			
		(ii)	Annotation or notes are often added to sketches.			
			What is the purpose of adding annotation to freehand sketches	?		
		(iii)	Give two advantages of using brief notes for annotation rather than long comments.			
			1.			
			2			
				[2]		
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(b)		e design process also makes use of modelling techniques which ude mock-ups, prototypes and computer modelling.	Examin Marks	ner Only Remai
	(i)	State a benefit of using computer modelling.		
		[1]		
	(ii)	Clearly explain the difference between mock-ups and prototypes. Your explanation should include how, when and why each would be used by a designer in the design process.		
		[3]		
			Total Qu	lestion
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	otated sketch or sketches, design an adjustable desk bedside table or unit. The lamp is to be made from ma		Examine Marks	r Or Ren
	illable in a school workshop. The design must satisfy th			
• The heig	ht or angle of the lamp should be easily adjustable.	[4]		
Material(used.	s) selection, justification and the economy of material(s	s) [4]		
must be	ave an on/off switch and its own 9 volt battery supply vaccessible to replace the battery. f circuit/electronic systems are not asked for.	vhich [4]		
Must be	stable to sit on a bedside table or unit.	[4]		
Must be	an aesthetically pleasing and functional design.	[4]		
	ality annotated sketches should be used. A minimum o			
Use the next	mensions should be included. page for your answer. If you need more space there	[4] e is an		
	page for your answer. If you need more space there			
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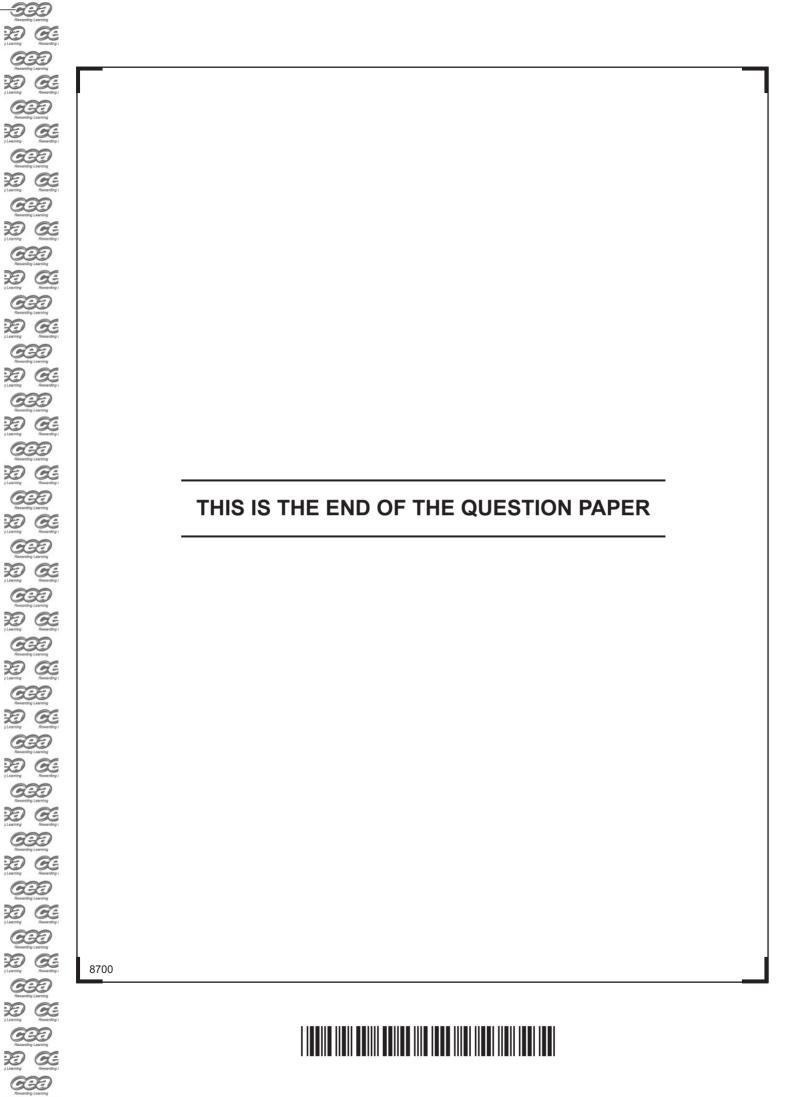
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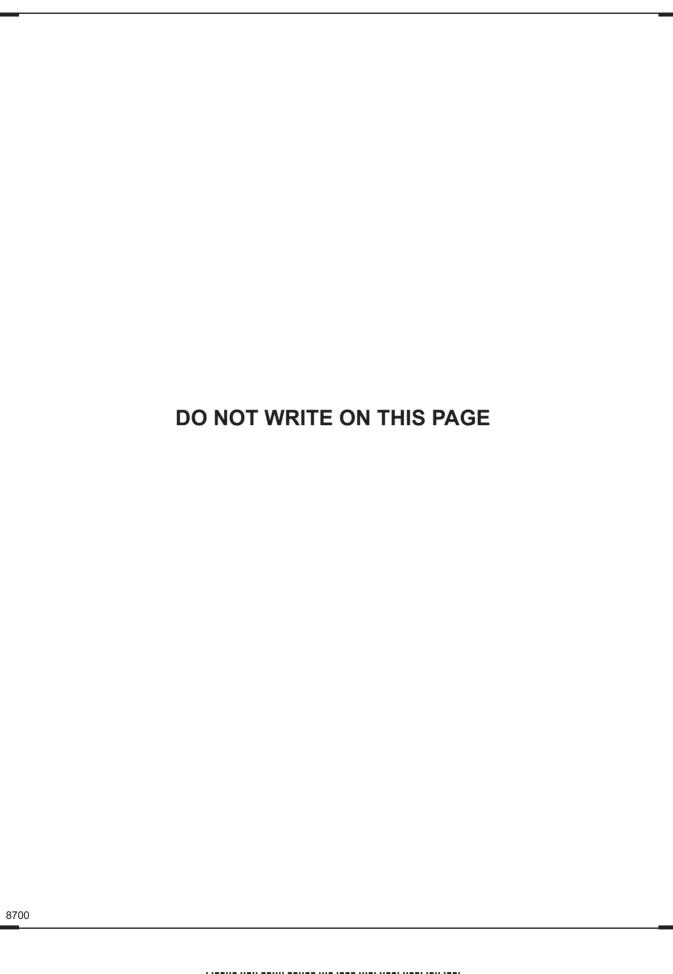


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