

SPECIMEN

General Certificate of Secondary Education

A562

Design and Technology: Resistant Materials

Unit A562: Sustainable Design

Specimen Paper

Candidates answer on the question paper.

Additional materials:

Time	4	h	_		
Time:	1	n	O	u	r

Candidate	Candidate
Forename	Surname
Centre Number	Candidate Number

INSTRUCTIONS TO CANDIDATES

- Write your name in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure you know what you have to do before starting your answer.
- Answer all the questions.
- Do not write in the bar codes.
- Do not write outside the box bordering each page.
- Write your answer to each question in the space provided.

INFORMATION FOR CANDIDATES

- The number of marks for each question is given in brackets [] at the end of each question or part question.
- Your Quality of Written Communication is assessed in questions marked with an asterisk (*).
- The total number of marks for this paper is 60.

FOR EXAMINER'S USE			
1	7	13	
2	8	14	
3	9	15	
4	10	16	
5	11	17	
6	12	18	
		TOTAL	

	This document consists of 9 print	ted pages and 3 blank pages.	
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Section A

Answer **all** questions.

1 This symbol stands for:



		lacksquare	
	(a)	School safety policy	
	(b)	British safety consideration	
	(c)	British safety institute	
	(d)	British standards institute	[1]
2	The	abbreviation of COSHH stands for:	
	(a)	Centre of social health hygiene	
	(b)	Central office supporting health hazards	
	(c)	Control of substances hazardous to health	
	(d)	Central office substances hazardous to health	[1]
3	Whi	ich of the following is not a renewable energy resource?	
	(a)	water	
	(b)	coal	
	(c)	wind	
	(d)	solar power	[1]
4	Biod	degradable means that it can:	
	(a)	grow naturally in the environment	
	(b)	naturally rot in the environment	
	(c)	be reusable as a different product	
	(d)	not grow naturally in the environment	[1]
5	The	role of a designer of sustainable products is to:	
	(a)	create innovative sustainable designs	
	(b)	modify existing designs	
	(c)	use traditional designs	
	(d)	design products that can be bought cheaply	[1]

	The term recycling means to			
,	State what is meant by a product being 'Fair trade'			
	What is the term given to the appearance of an object including its shatexture?		and	
0	What is the name given to the collection of data on human body meas	urements?	•	
Dε	ecide whether each of the following statements is <i>true</i> or <i>false</i> .	True	False	
11	Smart materials are materials whose properties can change due to changes in pressure, force, light or temperature.			
12	A renewable source is one that cannot be renewed within 50 years.			
13	Chemicals that can cause harm to people and animals are called bio products.			
14	Job production is used to make large batches of products.			
15	Ethical trading is a term used to show that the basic rights of the employees are protected.			
		Section	on A Tota	ıl [ʻ

Section B

Eco design is about designing a product with the environment in mind and trying to minimise the damage to the environment throughout a product's life cycle.

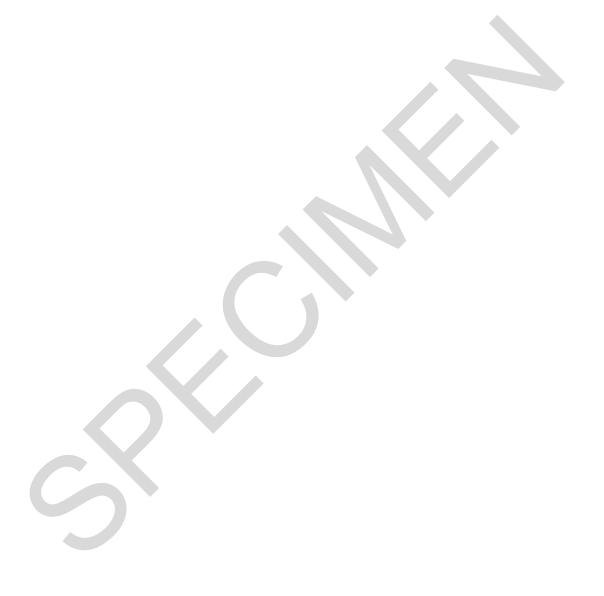
A designer must think about the impact on the environment.

16 (a)	Explain what the following areas are in the design process.	
	Product planning:	
		•
	[2	2]
	Development:	
		•
		•
	re	51
	Functionality:	-1
	i diretionality.	
		•
	[2	2]
	Safety:	-
	[2	2]
	Aesthetics:	
		•
	[7	1(

A manufacturer wishes to develop a range of environmental products to be sold in a shop at the Science Museum in London.

(b)	Name the product.	
		. [1]
(c)	Identify four specification points for your chosen design product.	
	1	
	2	
	3	
	4	
		. [1]

17 (a) Use sketches and notes to show your initial ideas for your chosen product.

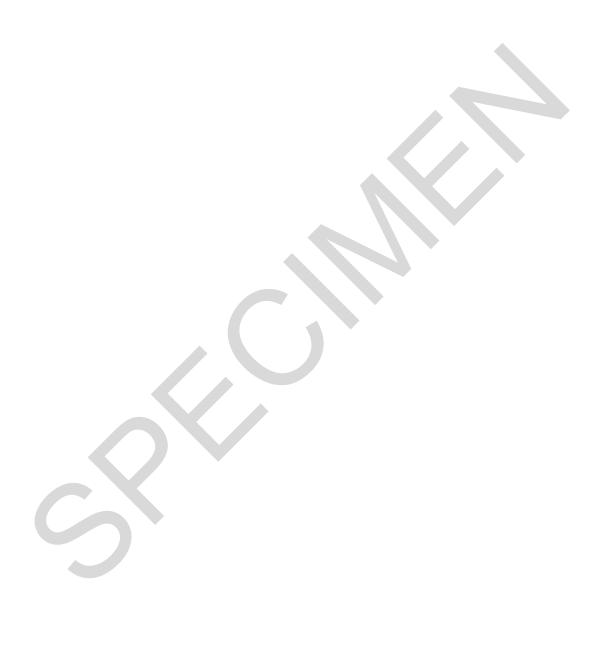


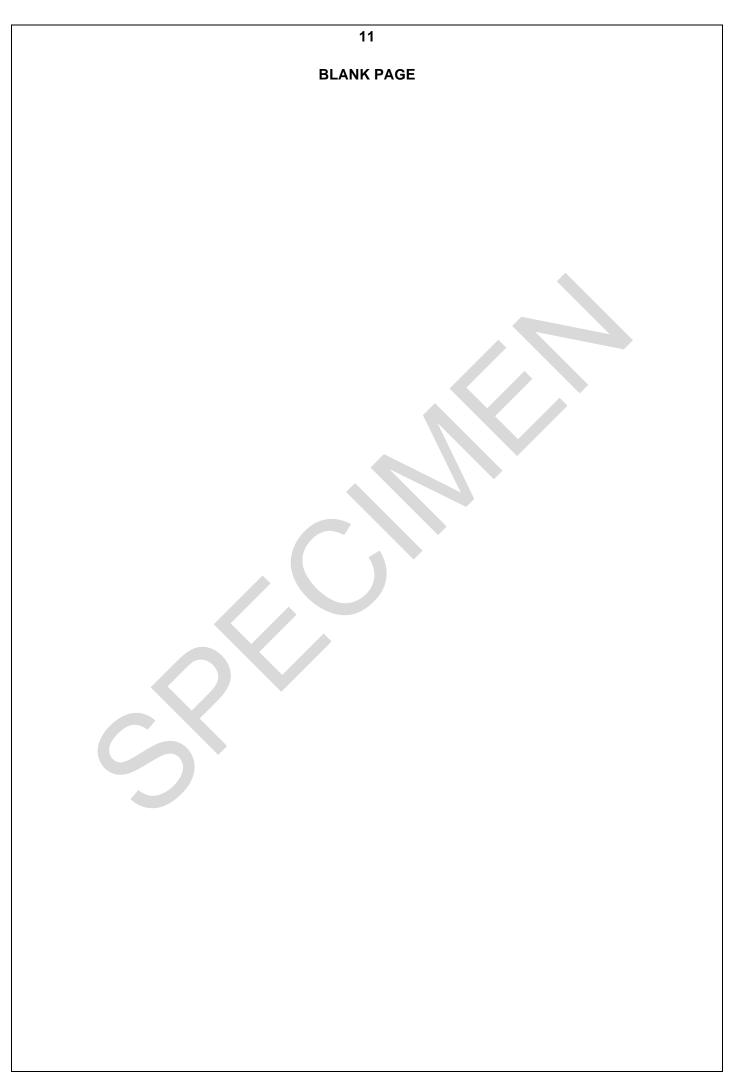
	se notes and sketches to develop one of your initial ideas.
;) W ac	ith reference to the 6Rs select and describe two ways in which your product could dress two of these issues.
1.	
2.	
	[
	Total [1

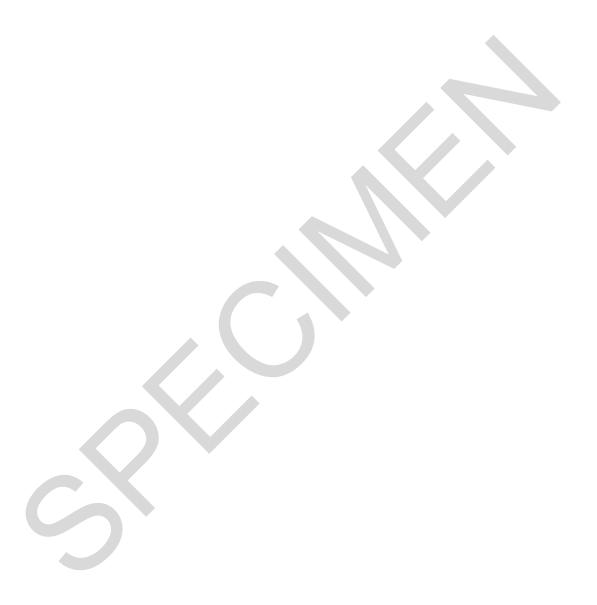
18 (a)	(i)	Give a suitable technique/method of construction for your product. [1]
	(ii)	
		1
		[1]
		2
		[1]
		3
		[1]
		4
		[1]
	(b)	Name a piece of equipment that would be needed for your technique/method.
		[1]
(Give two safety precautions that should be taken into account when using tools and equipment.
		1
		[1]
		2
		[1]

9
(d)* Products become 'obsolete' after a few years.
Discuss the difference between fashion and planned obsolescence.
[7]
Total [15]
Paper Total [60]

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OXFORD CAMBRIDGE AND RSA EXAMINATIONS

General Certificate of Secondary Education

DESIGN AND TECHNOLOGY RESISTANT MATERIALS

A562

Unit A562: Sustainable Design

Specimen Mark Scheme

The maximum mark for this paper is 60.



Section A		
Question Number	Answer	Max Mark
1(a)	This symbol stands for:	[1]
2	The abbreviation of COSHH stands for:	[1]
3	Which of the following is not a renewable energy resource?	[1]
4	Biodegradable means that it can:	[1]
5	The role of a designer of sustainable products is to:	[1]
6	In the space below draw the symbol that would be found on a product that can be recycled.	
	Accept variations of this symbol – e.g. without the shading	[1]
7	The term recycling means to a product. re-use	[1]
8	State what is meant by a product being 'Fair trade' fair wages for the workers in less economically developed countries (LEDCs)	[1]
9	fair wages for the workers in less economically developed countries (LEDCs) aesthetics	[1]
10	What is the name given to the collection of data on human body measurements? anthropometrics	[1]

Section A				
Question Number	Δηςνωρή			
11	Smart materials are materials whose properties can change due to changes in pressure, force, light or temperature.			
	true	[1]		
12	A renewable source is one that cannot be renewed within 50 years. false	[1]		
13	Chemicals that can cause harm to people and animals are called bio products.			
	false	[1]		
14	Job production is used to make large batches of products.			
	false	[1]		
15	Ethical trading is a term used to show that the basic rights of the employees are protected.			
	true	[1]		
	Section A Total	[15]		

Section B		
Question Number	Answer	Max Mark
16(a)	Eco design is about designing a product with the environment in mind and trying to minimise the damage to the environment throughout a products life cycle. A designer must think about the impact on the environment. Explain what the following areas are in the design process. Two marks for each section. Product Planning: 2x1 [2] Research, analysis of existing products Technical data of product Disassembly of existing products Properties required by product Choosing right materials & components Method of manufacture Tools & equipment needed.	
	Development: 2x1 [2]	[10]

- Changing an aspect or all of the design; materials, fastenings, colour, size etc.
- Enhancing a product with decoration
- Adding extra features
- · Range of ideas.

Functionality:

2x1 [2]

- Is it fit /capable for its intended purpose/use?
- Ease of manufacture
- Works efficiently
- Looks good & is saleable.

Safety:

2x1 [2]

- Safe use & disposal of product
- Legal requirements & legislation
- Safety standards- labelling BSI etc.
- Safety in the workplace & safety of workers when making
- Safety of user.

Aesthetics:

2x1 [2]

- The look / appearance of the product
- Style of product
- Properties of product- form, colour, finish etc.

Section B

Question Number	Answer	Max Mark
16(b)	Name the product. One mark for any suitable product.	[1]
16(c)	Identify four specification points for your chosen design product. One mark for each specification point. Max four. 1x4 [4] Generic design points e.g. 'cheap', 'durable', 'light' etc NOT acceptable Age/ target market/ user Size range, ergonomic/ anthropometrics Material properties Style maintenance finishes Components required	
	Production/ manufacturing methods.	[4]
	Total	[15]

17(a) Use sketches and notes to show your initial ideas for your chosen product.

Maximum of **six** marks.

6x1 [6]

- Design idea with no notes/ annotation.
- One idea with labelling.
- More than one idea with notes.
- A range of design solutions & annotation.
- · A range of design solutions, annotation and colour.
- A very well drawn & creative range with annotation.

17(b) Use notes and sketches to develop one of your initial ideas.

Answers must reflect the product focus & refer to 'design need'. Maximum of **five** marks.

5x1[5]

- One developed solution showing an idea from the initial ideas with some development but no annotation
- One developed idea with notes
- Clear & annotated development of an idea.
- Idea & annotation that refers / links to specification points.
- Idea & annotation that refers to three specification points

[6]

Question Number	Answer			
	Points to consider: Front & back views. Techniques/ methods identified. Colours identified or shown. Sizes/ measurements. Materials, fastenings, components. Finishing. Costing.	[5]		
17(c)	 With reference to the 6R's select and describe two ways in which your product could address two of these issues. Credit any reference to any two of the 6 R's. 2x2 [4] Recycle - material, product, disassembly. Re- use - pass on. (friend, family), charity shop, third world country. Reduce - production process, costs, emissions, wastage materials, paints, transport, life cycle. Refuse - use of sustainable materials, biodegradable. Materials we should refuse to use. 	•		
	 Re think - materials & components used, purpose of product. Repair - fixing products. 	[4]		
	Total	[15]		
18(a)(i)	Give a suitable technique/method of construction for your product. Any one suitable technique or method.	[1]		
18(a)(ii)	Describe <u>four</u> stages relevant to this technique/method. Four marks for description of relevant stages relating to i) technique or method selected. 4 x 1 [4] Preparation of materials. Specialist tools & equipment.			
	 Method of making / process referring to specialist terminology. Finishing. 	[4]		

Question Number	Answer			
18(b)	Name a piece of equipment that would be needed for your technique/method.			
	Any one suitable / relevant piece of specialist equipment needed for (a)(ii).			
	Do not credit any repeats from (a)(ii).	[1]		
18(c)	Give <u>two</u> safety precautions that should be taken into account when using tools and equipment.			
	Two marks:			
	2x1 [2]			
	Storage of chemicals/ ventilation to refer to finishes.			
	Protective clothing			
	Safety labelling			
	Safety of machinery	[2]		
18(d)*	Products become 'obsolete' after a few years.			
	Discuss the difference between fashion and planned obsolescence.			
	Planned			
	Continually changing designs.			
	Specific life span/ time limit.			
	To persuade users to up grade/ replace.			
	Product fails after a specified time by manufacturer.			
	Becomes obsolete/ irrepairable.			
	To generate long term sales volume by reducing time between repeat purchases.			
	Fashion			
	In style and out of style with current trends.			
	Continually changing designs.			
	Continually onling accigno.			

Section B		
Question Number	Answer	Max Mark
	'Feeling' out of date.	
	Allows for 'self expression'	
	Cheaper Replaceable.	
	replaceable.	
	Level 1 (0-2 marks)	
	Basic discussion, showing some understanding of the meaning of 'obsolete' in the context of resistant material products. Can provide a description of some of the conflicts that exist between fashion and planned obsolescence.	
	There will be little or no use of specialist terms. Answers may be ambiguous or disorganised. Errors of grammar, punctuation and spelling may be intrusive.	
	Level 2 (3-5 marks)	
	Adequate discussion, showing an understanding of the meaning of 'obsolete' in the context of resistant material products. Can provide a description of the conflicts that exist between fashion and planned obsolescence.	
	There will be some use of specialist terms, although these may not always be used appropriately. The information will be presented for the most part in a structured format. There may be occasional errors in spelling, grammar and punctuation	
	Level 3 (6-7 marks)	
	Thorough discussion, showing a clear understanding of the meaning of 'obsolete" in the context of resistant material products. Can provide a clear description of the conflicts that exist between fashion and planned obsolescence.	
	Specialist terms will be used appropriately and correctly. The information will be presented in a structured format. The candidate can demonstrate	
	the accurate use of spelling, punctuation and grammar.	[7]
	Total	[15]
		- -
	Section B Total	[45]
	Paper Total	[60]

Assessment Objectives Grid (includes QWC)

Question	AO1	AO2	AO3	Total
1	1			1
2	1			1
3			1	1
4	1			1
5	1			1
6		1		1
7	1			1
8	1			1
9			1	1
10	1			1
11			1	1
12			1	1
13			1	1
14			1	1
15			1	1
16	10	5		15
17		11	4	15
18*	12	3		15
TOTAL	29	20	11	60