

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Question	Mark
1	
2	
3	
4	
5	
6	
7	
TOTAL	



General Certificate of Secondary Education
June 2012

Design and Technology: Product Design

45551

Unit 1 Written Paper

Friday 25 May 2012 9.00 am to 11.00 am

For this paper you must have:

- a pen, a pencil, a ruler, an eraser, a pencil sharpener and coloured pencils.

Time allowed

- 2 hours

Instructions

- Use black ink or black ball-point pen. Use pencil and coloured pencils only for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this answer book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 120.
- The question in Section A relates to the context referred to in the preliminary material that was previously issued.
- All dimensions are given in millimetres unless otherwise stated.
- You are reminded of the need for good English and clear presentation in your answers. Quality of Written Communication will be assessed in Question 7(b).



J U N 1 2 4 5 5 5 1 0 1

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Section A

Answer **all** questions in the spaces provided.

Question 1 is about designing a packaging solution for a fragrance bottle.

You are advised to spend about 30 minutes on this question.

1 The fragrance bottle below needs to be packaged.



1 (a) The table below gives one function of packaging for the fragrance bottle above. Give **two** more functions and in each case explain your answer.

Function	Explanation
<i>Transport</i>	<i>The packaging will allow lots of fragrance bottles to be stacked together for transportation to the shop and reduce space needed for storage.</i>
.....
.....

(6 marks)



1 (b) Name **two** materials which would be suitable for packaging the fragrance bottle.
Give a reason for each material chosen.

Material 1

Reason

.....

Material 2

Reason

.....

(4 marks)

Question 1 continues on the next page

Turn over ►



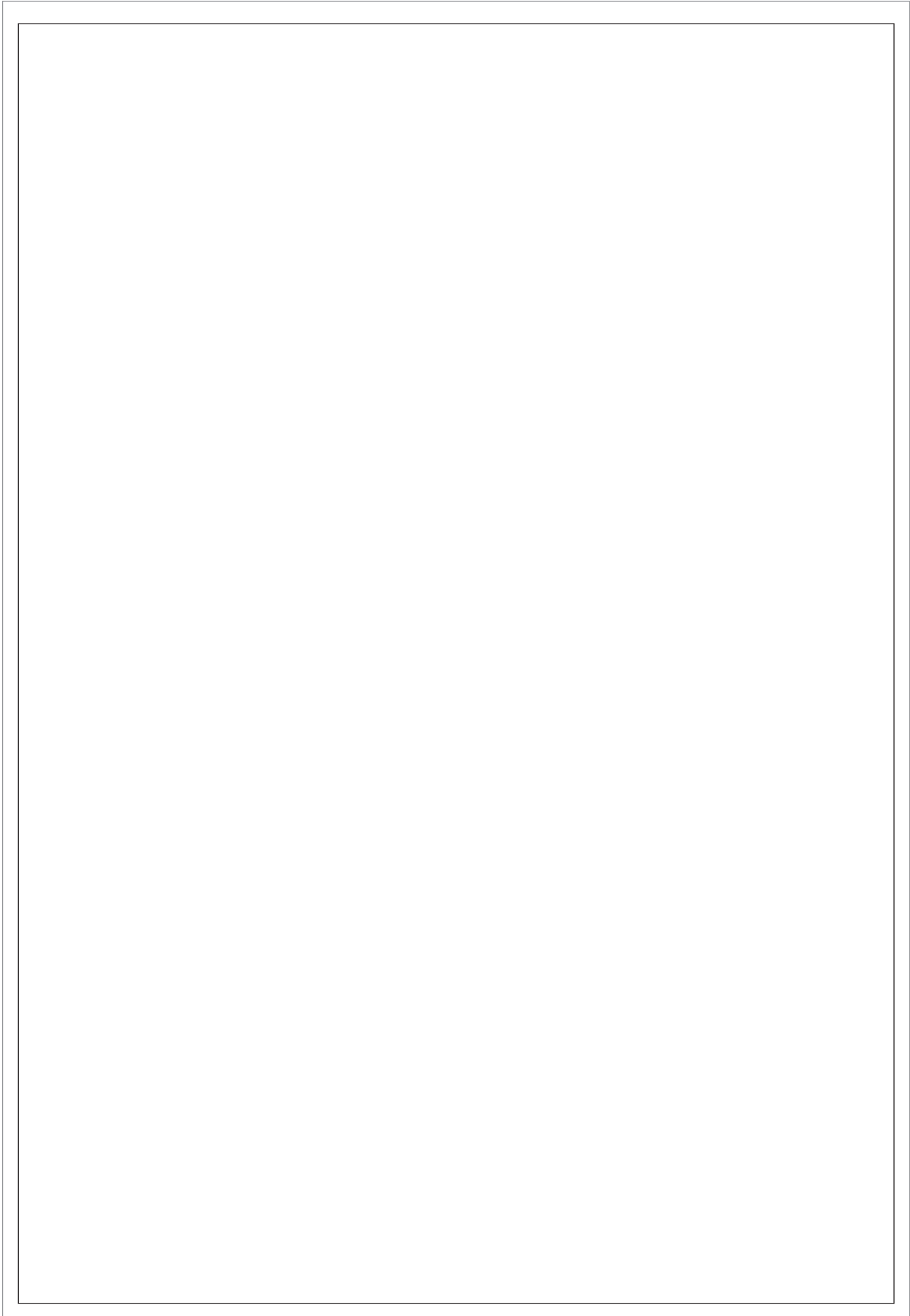
- 1 (c)** In the space below and opposite, sketch a design for packaging the fragrance bottle.



Marks will be given for:

- a creative packaging solution (6 marks)
- how the packaging would be constructed (5 marks)
- surface decoration including the use of colour (5 marks)
- notes to explain how the packaging performs the functions described in 1(a). (4 marks)





30

Turn over ►



Section B

Answer **all** questions in the spaces provided.

Question 2 is about materials and sustainability.


You are advised to spend about 20 minutes on this question.

2

 Cutlery	 Spatula	 Vase	 Greetings card	 Bread
 Oven glove	 Food packaging	 Sketchbook	 Wine goblet	 Jeans



- 2 (a) (i) Choose **two** products from those shown above.
For **each** product you have chosen, complete the table below.

An example is given for you.

Product	Main material	Source of material	Renewable? ✓ or ✗
 Drink can	Aluminium	Bauxite ore	✗

(6 marks)



				
Cutlery	Spatula	Vase	Greetings card	Bread
				
Oven glove	Food packaging	Sketchbook	Wine goblet	Jeans

- 2 (a) (ii)** Choose **one** product from those shown above.
Name the main material and give **two** of its properties.
Explain why these properties make the material suitable for the product.

Product

Material

Property 1
(1 mark)

Explanation
.....
(2 marks)

Property 2
(1 mark)

Explanation
.....
(2 marks)

Question 2 continues on the next page

Turn over ►



2 (b)

Explain the reasons why different materials are combined.

Give specific examples in your answer.

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(6 marks)

18



Question 3 is about how products have changed over time.

You are advised to spend about 15 minutes on this question.

3 A leading retailer of home products sells many *Flat Pack* items.



3 (a) Explain the meaning of *Flat Pack*.

.....
.....
.....
.....
(2 marks)

3 (b) Knock down fittings are used to assemble flat pack products.

3 (b) (i) Give **two** advantages to the user of assembling furniture with knock down fittings.

1
2
(2 marks)

3 (b) (ii) Give **two** advantages to the manufacturer of knock down fittings.

1
2
(2 marks)

Question 3 continues on the next page

Turn over ►



3 (c) (i) Explain how retailers selling flat pack products have changed the way people furnish their homes.

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(4 marks)

3 (c) (ii) What is the impact of these changes on the environment?

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(4 marks)

14

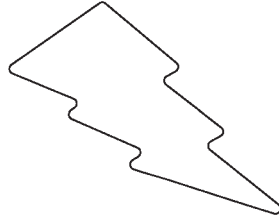


Question 4 is about manufacturing products.

You are advised to spend about 15 minutes on this question.

4 A young designer plans to make and sell a range of simple products at a craft fair.

The range of products will all be based on the same shape shown below.
They will be manufactured in batches of 200.



4 (a) Use notes and sketches to develop the shape into **one** of the products from the list below suitable for making in batches of 200. Circle the product you have chosen.

Biscuit

Jewellery

Badge

Key fob

(4 marks)

Turn over ►



4 (b) (i) Name a suitable main material for your product.

.....
(1 mark)

4 (b) (ii) Explain why the material you have chosen is suitable for this scale of production.

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(2 marks)

4 (c) Explain how you would make sure all 200 products are the same.

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(4 marks)



4 (d) Name **two** tools or pieces of equipment needed to make the product.
Give **one** health and safety consideration for each.

1

Health and safety consideration

2

Health and safety consideration

(6 marks)

17

Turn over for the next question

Turn over ►



Question 5 is about inclusive design.

You are advised to spend about 10 minutes on this question.

5 Products are often modified for disabled users.



5 (a) Suggest how the telephone shown above could be modified to be more suitable for each of the following users with disabilities.

Explain how the modification helps the user.

5 (a) (i) A hearing impaired user

Modification:

Explanation:

.....
.....
.....

(3 marks)

5 (a) (ii) A visually impaired user

Modification:

Explanation:

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(3 marks)



5 (b) A wheelchair user can find moving around their daily environment difficult.



Suggest ways in which designers can help minimise these difficulties for wheelchair users.
Give reasons in your answer.

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(6 marks)

12

Turn over ►



Question 6 is about human factors and product labelling.

You are advised to spend about 20 minutes on this question.

6 (a) (i) What is meant by the term *anthropometrics*?

.....
.....

(2 marks)

6 (a) (ii) Explain how *anthropometrics* was used in the design of the hair dryer shown below.



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(4 marks)



6 (b) (i) What is meant by the term *ergonomics*?

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(2 marks)

6 (b) (ii) Explain how the designer considered *ergonomics* in the design of the hair dryer shown on page 16.

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(4 marks)

Question 6 continues on the next page

Turn over ►



6 (c) The symbol shown below is displayed on the hair dryer.



Give the meaning of this symbol.

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(1 mark)

6 (d) (i) Why do manufacturers use symbols on products?

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(2 marks)

6 (d) (ii) What is the benefit to the user of the CE symbol?

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.....
(2 marks)



Question 7 is about the use of computers in product manufacture.

You are advised to spend about 10 minutes on this question.

7 Computers are now a major part of product manufacture.

7 (a) Explain how computers are used in each of the following:

Just In Time manufacture

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(2 marks)

Stock control

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(2 marks)

Question 7 continues on the next page

Turn over ►



7 (b) Explain why many products are manufactured in mass production using Computer Aided Manufacture (CAM).

Give examples of products to explain your answer.

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(8 marks)

12

END OF QUESTIONS

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