

Surname		Other Names	
Centre Number		Candidate Number	
Candidate Signature			

Leave blank

General Certificate of Secondary Education
 Summer 2003
 Foundation Tier



**DESIGN AND TECHNOLOGY
 (PRODUCT DESIGN)**

**3544/F
 F**

Thursday 19 June 2003 1.30 pm to 3.30 pm

In addition to this paper you will require:

- blue or black pen, pencil, coloured pencils and ruler;
- a colour Insert Sheet (enclosed).

For Examiner's Use	
Number	Mark
1	
2	
3	
4	
5	
6	
7	
TOTAL	
Examiner's initials	

Time allowed: 2 hours

Instructions

- Use blue or black ink or ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions in the spaces provided.
- Use the Insert Sheet included to help you answer the questions.
- Do all rough work in this book. Cross through any work you do not want marked.

Information

- The maximum mark for this paper is 125.
- Mark allocations are shown in brackets.
- You are reminded of the need for good English and clear presentation.

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

Question 1 is about research methods.

You should spend about 8 minutes on this question.

1 A new charity has been started to promote personal Health and Wellbeing.

When starting a project you would carry out a number of different types of research.

- (i) Name **three** different ways of researching suitable items for sale in the new charity shop.
- (ii) State how you would carry out each type of research.
- (iii) Explain why you have chosen it.

(a) Research method 1

How I would do this

Why I would choose this method

.....

(3 marks)

(b) Research method 2

How I would do this

Why I would choose this method

.....

(3 marks)

(c) Research method 3

How I would do this

Why I would choose this method

.....

(3 marks)

Question 2 is about the properties of materials, components and processes.

You should spend about 25 minutes on this question.

2 A new charity has been started to promote Health and Wellbeing. The charity will raise funds by selling products as shown on the enclosed colour Insert Sheet.

(a) Choose any **two** products from the sheet that reflect the material areas that you have studied.

Complete the table below to describe the **two** products.

Name of Product	1	2
Name the specific materials or ingredients used for construction and decoration/finish (2 marks) (2 marks)
What are the properties or nutritional values of these materials or ingredients? (3 marks) (3 marks)
What is the typical scale of production of this product? (1 mark) (1 mark)

(12 marks)

(b) Give **two** reasons why ceramic materials are suitable for the manufacture of oil burners (**Figure 4**).

1

2

(2 marks)

(c) The label on the CD rack (**Figure 8**) carries the symbol shown below.



(i) What is the meaning of the symbol?

.....
.....

(2 marks)

(ii) Explain why a manufacturer would put it on a product.

.....
.....

(2 marks)

(iii) The CD rack also carries a BSI mark. What do the letters BSI stand for?

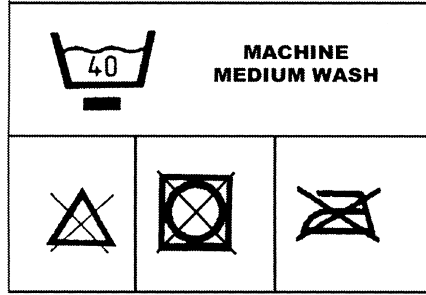
.....

(2 marks)

QUESTION 2 CONTINUES ON THE NEXT PAGE

Turn over ►

(d) An example of clothes labelling is shown below.



(i) Why should the manufacturer include labelling of this type?

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

(3 marks)

(ii) State **two** pieces of information that can be obtained from the label.

1

2

(2 marks)

Question 3 is about manufacturing processes.

You should spend about 25 minutes on this question.

- 3** Choose **one** of the products from the colour Insert Sheet and using notes and sketches, describe how you would make it.

Name of product

Marks will be awarded for

Preparation of materials	<i>(4 marks)</i>
Correct naming of tools and equipment	<i>(4 marks)</i>
Accurate description of processes	<i>(6 marks)</i>
Finishing techniques and processes	<i>(4 marks)</i>

(a)

(i) Preparation of materials

(ii) Tools, equipment and processes used

(iii) Finishing techniques and processes

QUESTION 3 CONTINUES ON THE NEXT PAGE

Turn over ►

(b) State **two** safety precautions to be taken whilst making the product.

1

2

(2 marks)

(c) Describe **two** quality control checks that would take place whilst making the product above.

1

.....

2

.....

(4 marks)

Question 4 is about testing and evaluating products.

You should spend about 15 minutes on this question.

4 The product chosen in Question 3 is to be tested before sale.

(a) State **two** functional requirements of the product.

1

2

(4 marks)

(b) Describe **two** tests that could be used to evaluate the success of the product.

1

.....

2

.....

(4 marks)

- (c) A modified, limited production version of the product is to be made.

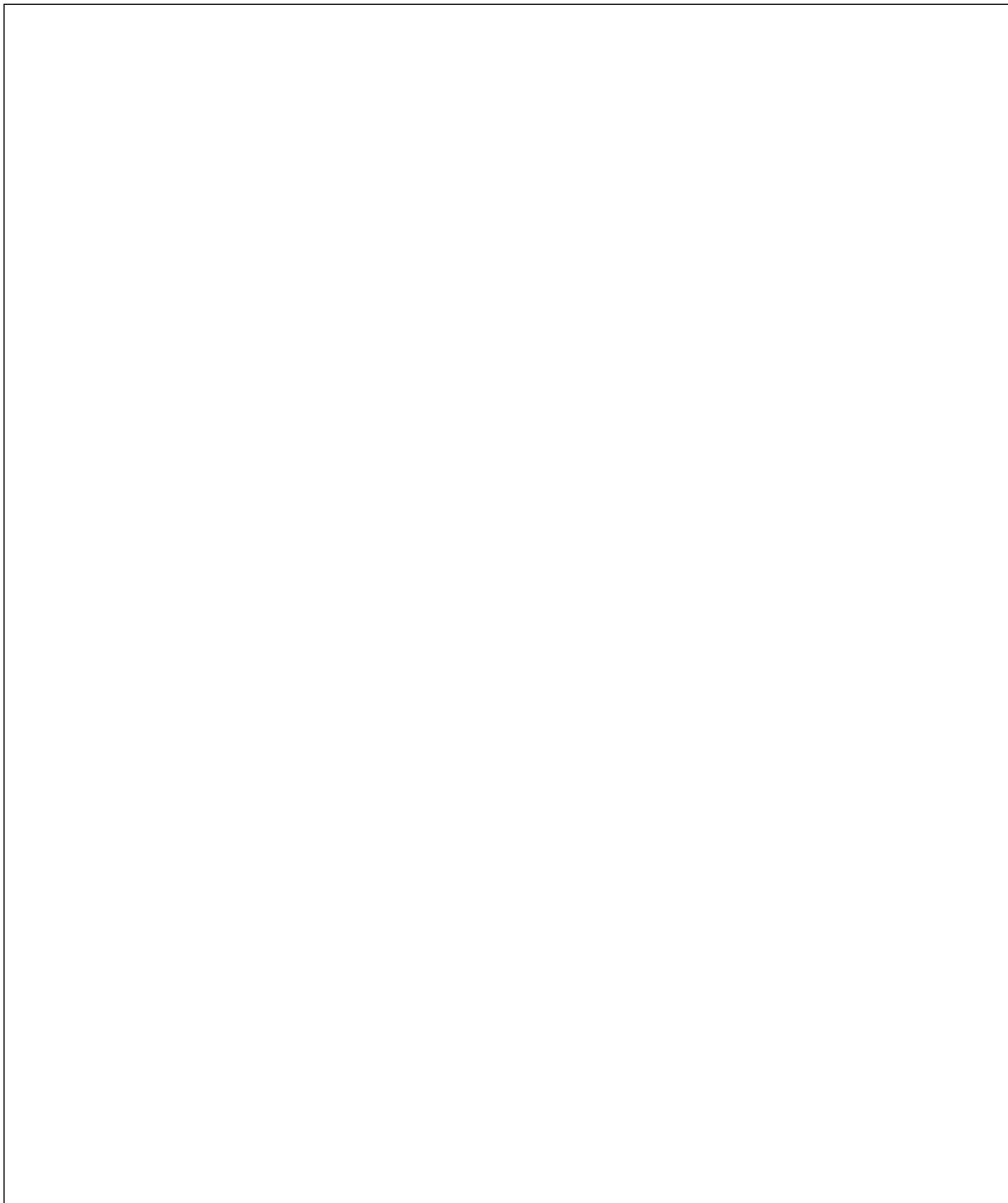
In the space below, use notes and sketches to describe your *design* for the new modified version of this product.

Your design may involve the use of different materials or ingredients from those used in the original product.

Marks will be awarded for:

Naming ingredients or materials used (3 marks)

Clarity of notes and sketches (6 marks)



Turn over ►

Question 5 is about packaging of products.

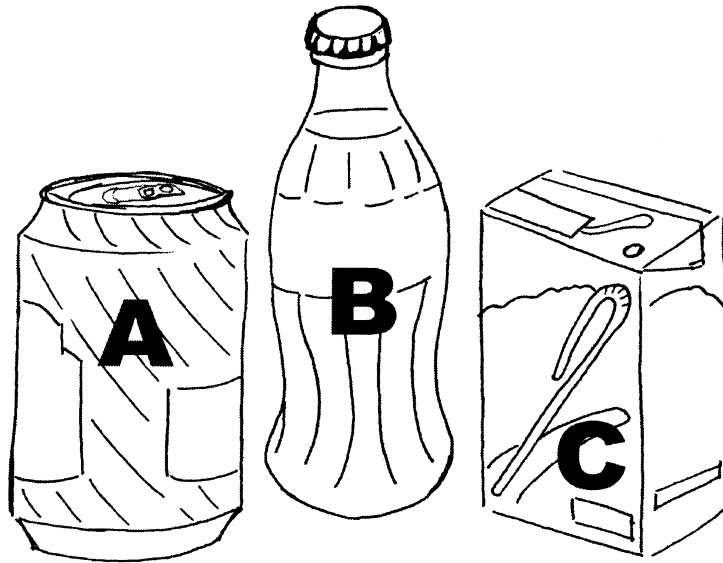
You should spend about 15 minutes on this question.

5 (a) Give **three** reasons for the packaging of products.

- 1
- 2
- 3

(3 marks)

(b) The sketches below show drink packaging using different materials.



Give **one advantage** and **one disadvantage** of each material.

	Advantage	Disadvantage
Package A		
Package B		
Package C		

(6 marks)

(c) It is important for the environment that we cut down on the amount of rubbish produced.

State **three** ways of doing this.

1

2

3

(3 marks)

(d) (i) Which of the three packages shown cannot be recycled?

.....
(1 mark)

(ii) Give **one** reason for this.

.....
(1 mark)

(e) Draw the symbol in the space below that shows a package can be recycled.



(2 marks)

TURN OVER FOR THE NEXT QUESTION

Turn over ►

Question 6 is about the design of new products.

You should spend about 20 minutes on this question.

- 6** (a) From the colour Insert Sheet choose **one** product and use notes and sketches to show an initial idea for its packaging.

Marks will be awarded for

Quality of idea *(3 marks)*

Quality of notes *(4 marks)*

Quality of sketches *(3 marks)*

Initial Idea



- (b) In the space below produce a detailed sketch of your final idea for the package. Include all important information.

Marks will be awarded for

Quality of sketch (5 marks)

Important information (5 marks)

Final Idea



Turn over ►

Question 7 is about manufacturing systems and the environment.

You should spend about 12 minutes on this question.

7 (a) CAD and CAM are now commonly used in the production of packaging. What do the initials mean?

(i) CAD means
(1 mark)

(ii) CAM means
(1 mark)

(b) (i) Explain how CAD could be used in the design of packaging.

.....
.....
.....
(3 marks)

(ii) Explain how CAM could be used in the production of packaging.

.....
.....
.....
(3 marks)

(c) Manufacturing industry can have an impact on the environment. One way of reducing this would be to use renewable energy sources.

Name **three** types of renewable energy.

1

2

3

(3 marks)

(d) Complete the diagram below by choosing the missing inputs and outputs from the list below.

Solid waste material

Emissions to water

Energy/fuels

Emissions into air

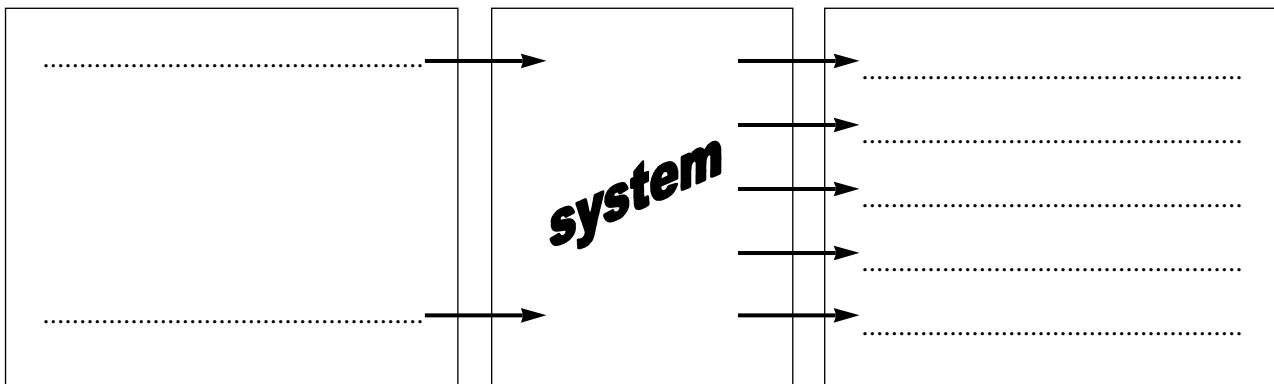
Usable products

Waste heat

Raw materials

Inputs

Outputs



(3 marks)

END OF QUESTIONS

Design and Technology: Product Design - Foundation Tier

The photographs on this sheet are for use in answering:

Questions 2, 3 and 6



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