Surname		Other Names	
Centre Number			Candidate Number				
Candidate Signature									

Leave blank

General Certificate of Secondary Education
June 2004

ASSESSMENT and QUALIFICATIONS ALLIANCE

DESIGN AND TECHNOLOGY (PRODUCT DESIGN) Foundation Tier

3544/F

F

Wednesday 9 June 2004 1.30 pm to 3.30 pm

In addition to this paper you will require:
- blue or black pen, pencil, coloured pencils and ruler.

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.
- Do all rough work in this book. Cross through any work you do not want marked.

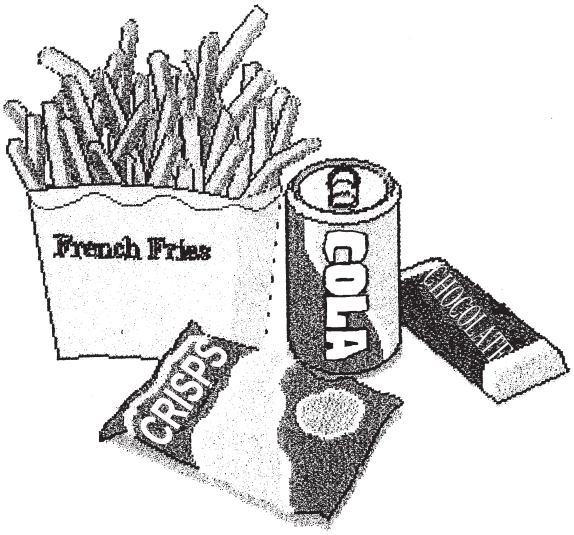
Information
- The maximum mark for this paper is 125.
- Mark allocations are shown in brackets.
- You are reminded of the need for good English and clear presentation.

For Examiner's Use	
Number	Mark
1	
2	
3	
4	
5	
6	
7	
8	
TOTAL	
Examiner's initials	

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

Question 1 is about environmental issues.
You should spend about 5 minutes on this question.

1 Packaging is a major environmental issue.



(a) Explain why this is the case.

.....

.....

(2 marks)

(b) The chip carton is made from a renewable material. Explain what renewable means.

.....

.....

(2 marks)

(c) The drinks can is made from a non-renewable material. Explain what non-renewable means.

.....

.....

(2 marks)

(d) All of the packaging shown above could be *recycled*. Explain **two** problems that need to be overcome before any of these items can be recycled.

Problem 1 .....

Problem 2 .....

(2 marks)

8

LEAVE MARGIN BLANK

Question 2 is about the properties of materials and components.
You should spend about 10 minutes on this question.

2 Choose a product you have become familiar with during your course.

(a) In the box below, produce a labelled drawing of your chosen product.

(6 marks)

(b) Complete the table below to describe the product you have drawn.

Name of product	.....
(i) Name **two** specific materials, components or ingredients used in the making of the product.	1 ..... 2 ..... *(2 marks)*
(ii) List the properties or nutritional values of the materials, components or ingredients used in the product.	.... *(3 marks)*
(iii) Name **one** attractive feature of the product.	.... *(1 mark)*

12

Question 3 is about manufacturing.
You should spend about 25 minutes on this question.

3 (a) Explain with notes and sketches how you would make the product you chose in Question 2.

Marks will be awarded for:

preparation of materials, components or ingredients; *(4 marks)*

how the product is made; *(6 marks)*

naming tools and equipment used; *(4 marks)*

how the product is finished. *(4 marks)*

(i) Preparation of materials, components or ingredients

(ii) Making of the product, including processes, tools and equipment used

(iii) Finishing techniques and processes

QUESTION 3 CONTINUES ON THE NEXT PAGE

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

1 .....

2 .....

(2 marks)

(c) Describe **two** quality control checks that would be used during the making of the product in quantity.

1 .....

2 .....

(4 marks)

24

Question 4 is about consumer protection.
You should spend about 10 minutes on this question.

4 (a) The symbol below is often found on quality products.

(i) Name the symbol.

.....

(1 mark)

(ii) Give a reason for the use of this symbol.

.....

.....

.....

(2 marks)

(b) The **three** symbols shown in the table below are used on packaging.

Complete the table below to explain why each is used.

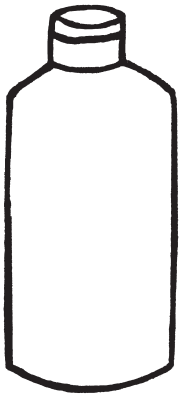
Symbol	Reason for symbol
	
	
	

(6 marks)

9

Question 5 is about designing, testing and evaluating products.
You should spend about 20 minutes on this question.

5 A sketch of a bottle used to package shower gel is shown below.



The design of the bottle is to be changed to make it more appealing and easier for children to use in the shower.

(a) State **two** design requirements for the bottle so that it can be used easily.

1 .....

.....

2 .....

.....

(4 marks)

(b) What anthropometric data would you need to consider in your design?

.....

.....

(2 marks)

(c) In the space below, use notes and sketches to show how you would change the design of the bottle.

Include the use of colour in your design.

Marks will be awarded for making the design:

(i) more appealing to children; *(6 marks)*

(ii) easier for children to use in the shower. *(6 marks)*

QUESTION 5 CONTINUES ON THE NEXT PAGE

(d) Describe **two** tests that could be used to evaluate the success of the redesigned bottle.

1 .....

.....

2 .....

.....

(4 marks)

22

TURN OVER FOR THE NEXT QUESTION

Question 6 is about the design and manufacture of new products.
You should spend about 40 minutes on this question.

6 A birthday card for children is to be produced.

(a) State **four** specification points for the card.

1 .....

2 .....

3 .....

4 .....

(4 marks)

(b) Design a layout showing the front of the card.

Marks will be awarded for:

quality / range of ideas; *(6 marks)*

quality of notes; *(3 marks)*

quality of sketches and use of colour. *(4 marks)*

You will be required to complete a detailed final idea in part (c) on the next page.

Initial ideas for the card

(c) In the space below produce a detailed coloured design of your final idea for the card.

Marks will be awarded for:

quality of design; *(6 marks)*

layout of information; *(4 marks)*

relationship to specification points you have given in part (a). *(4 marks)*

Final design

QUESTION 6 CONTINUES ON THE NEXT PAGE

(d) These cards are to be produced commercially.

Name **two** of the production stages.

1 .....

2 .....

(2 marks)

(e) Using notes and sketches describe **one** of the production stages you have named in part (d).

(5 marks)

Question 7 is about computer aided design and computer aided manufacture.
You should spend about 5 minutes on this question.

7 Computer aided design (CAD) and computer aided manufacture (CAM) are now used in the design and prototyping of products.

(a) Explain the advantages of using CAD for designing.

.....

.....

.....

.....

(4 marks)

(b) Explain the advantages of using CAM when making prototypes.

.....

.....

.....

.....

(4 marks)

8

TURN OVER FOR THE NEXT QUESTION

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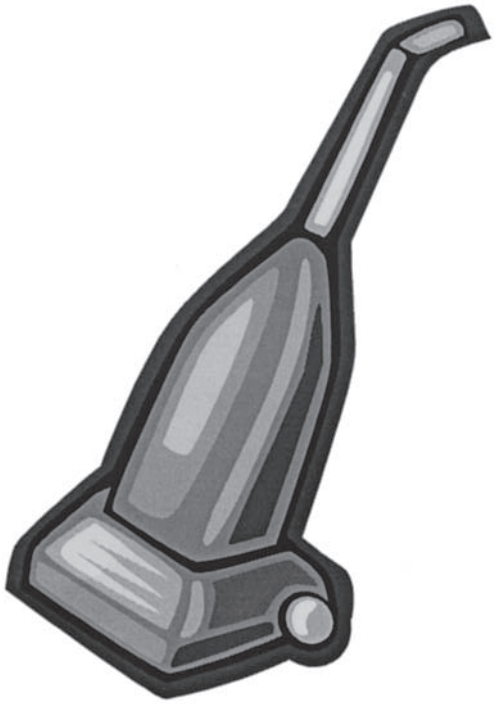
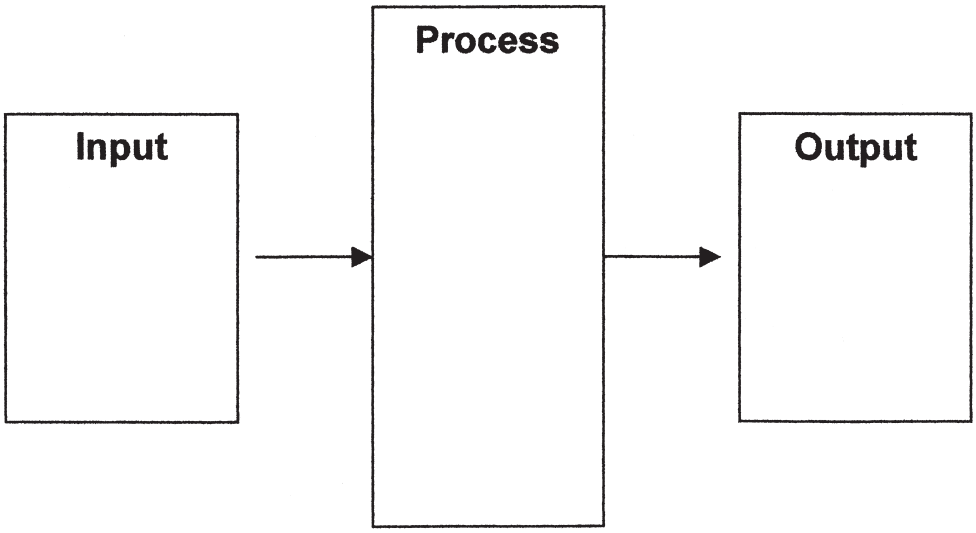
Question 8 is about systems and control.
You should spend about 5 minutes on this question.

8 The vacuum cleaner shown below makes use of a simple control system.



Complete the system diagram below to describe the operation of the vacuum cleaner.



(4 marks)

4

END OF QUESTIONS