

Surname						Other Names					
Centre Number						Candidate Number					
Candidate Signature											

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General Certificate of Secondary Education  
June 2004



**DESIGN AND TECHNOLOGY  
(PRODUCT DESIGN)  
Higher Tier**

**3544/H  
H**

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.

For Examiner's Use	
Number	Mark
1	
2	
3	
4	
5	
6	
7	
8	
<b>TOTAL</b>	
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.
- 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.

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

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**Question 1 is about the properties of materials and components**  
**You should spend about 15 minutes on this question.**

- 1** 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 <b>two</b> specific materials, components or ingredients used in the making of the product.	1 ..... 2 ..... <i>(2 marks)</i>
(ii) List the properties or nutritional values of the materials, components or ingredients used in the product.	..... ..... ..... <i>(3 marks)</i>
(iii) State <b>one</b> environmental or health issue associated with the product.	..... ..... ..... <i>(2 marks)</i>
(iv) State the main aesthetic or functional quality of the product.	..... ..... <i>(1 mark)</i>

**TURN OVER FOR THE NEXT QUESTION**

**Turn over ►**

**Question 2 is about manufacturing.**  
**You should spend about 25 minutes on this question.**

- 2 (a) Explain with notes and sketches how you would make the product you chose in Question 1.

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 2 CONTINUES ON THE NEXT PAGE**

**Turn over ►**

(b) Explain how you would carry out a risk assessment of the processes involved using one piece of equipment you have named.

.....

.....

.....

.....

.....

*(4 marks)*

**Question 3 is about consumer protection.  
You should spend about 10 minutes on this question.**

- 3 (a) (i) Name an organisation involved in consumer protection.

.....  
(1 mark)

- (ii) Explain how it protects the consumer.

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

- (b) The mark below is often shown on packaging labels.

75ml e

- (i) Explain why this mark is included on the label.

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

- (ii) State **three** different pieces of information that should be included on labelling for it to conform to consumer protection regulations.

1 .....

2 .....

3 .....

(3 marks)

**QUESTION 3 CONTINUES ON THE NEXT PAGE**

**Turn over ►**

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



(i) What information does this symbol give the consumer?

.....  
(1 mark)

(ii) Explain the advantages to a toy manufacturer of having this symbol on the product label.

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

(iii) Name **two** other symbols that could be included on toy labels.

1 .....  
2 .....  
(2 marks)



**Question 4 is about packaging products.  
You should spend about 10 minutes on this question.**

4 The photograph below shows two methods of packaging pills.



(a) Select **one** of the packaging methods above. Give **three** criteria that the manufacturer would use to evaluate its success.

Tick your chosen packaging	A		B	
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- 1 .....
- 2 .....
- 3 .....

(3 marks)

(b) Give **one** advantage and **one** disadvantage for the consumer of *each* of the **two** packaging methods shown above.

Package	Advantage	Disadvantage
<b>A</b>	..... .....	..... .....
<b>B</b>	..... .....	..... .....

(4 marks)

**Question 5 is about the design and manufacture of new products.  
You should spend about 40 minutes on this question.**

**5** A birthday card is to be produced in a batch of 2000. The card is to include a detachable badge.

(a) State **three** specification points, with reasons, for the card and badge. An example specification point, with a reason, has been completed for you.

The badge must be an integral part of the card design as the badge is to be attached to the card as a selling point.

- 1 .....
- .....
- 2 .....
- .....
- 3 .....
- .....

*(6 marks)*

(b) Design a card including the badge.

Marks will be awarded for:

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

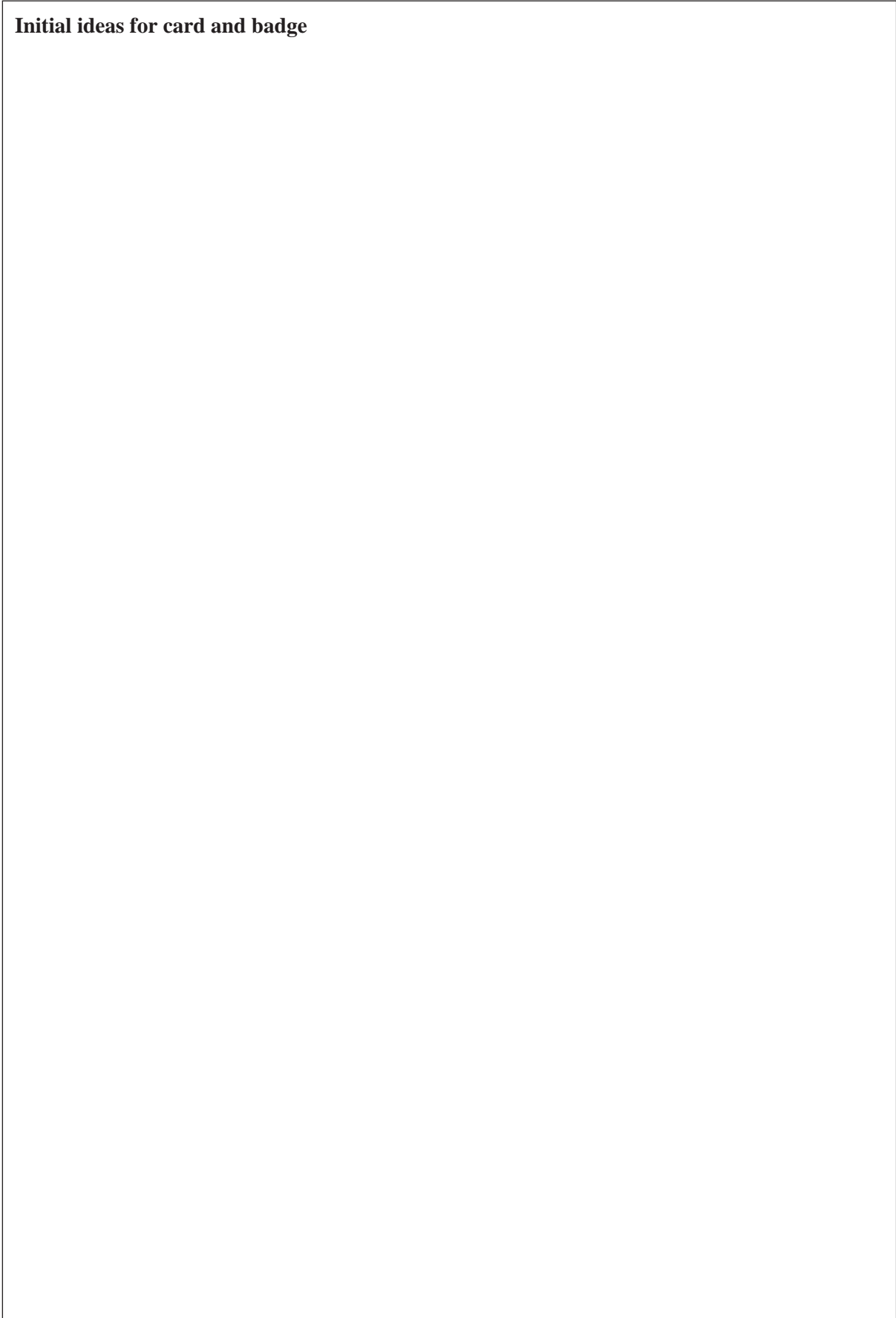
quality of notes; *(3 marks)*

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

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

**Initial ideas for the badge**

**Initial ideas for card and badge**



**QUESTION 5 CONTINUES ON THE NEXT PAGE**

**Turn over ►**

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

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 idea**



(d) Using the specification completed in part (a) evaluate your final design.

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

*(4 marks)*

(e) These cards are to be produced commercially.

Name **two** of the production stages.

1 .....

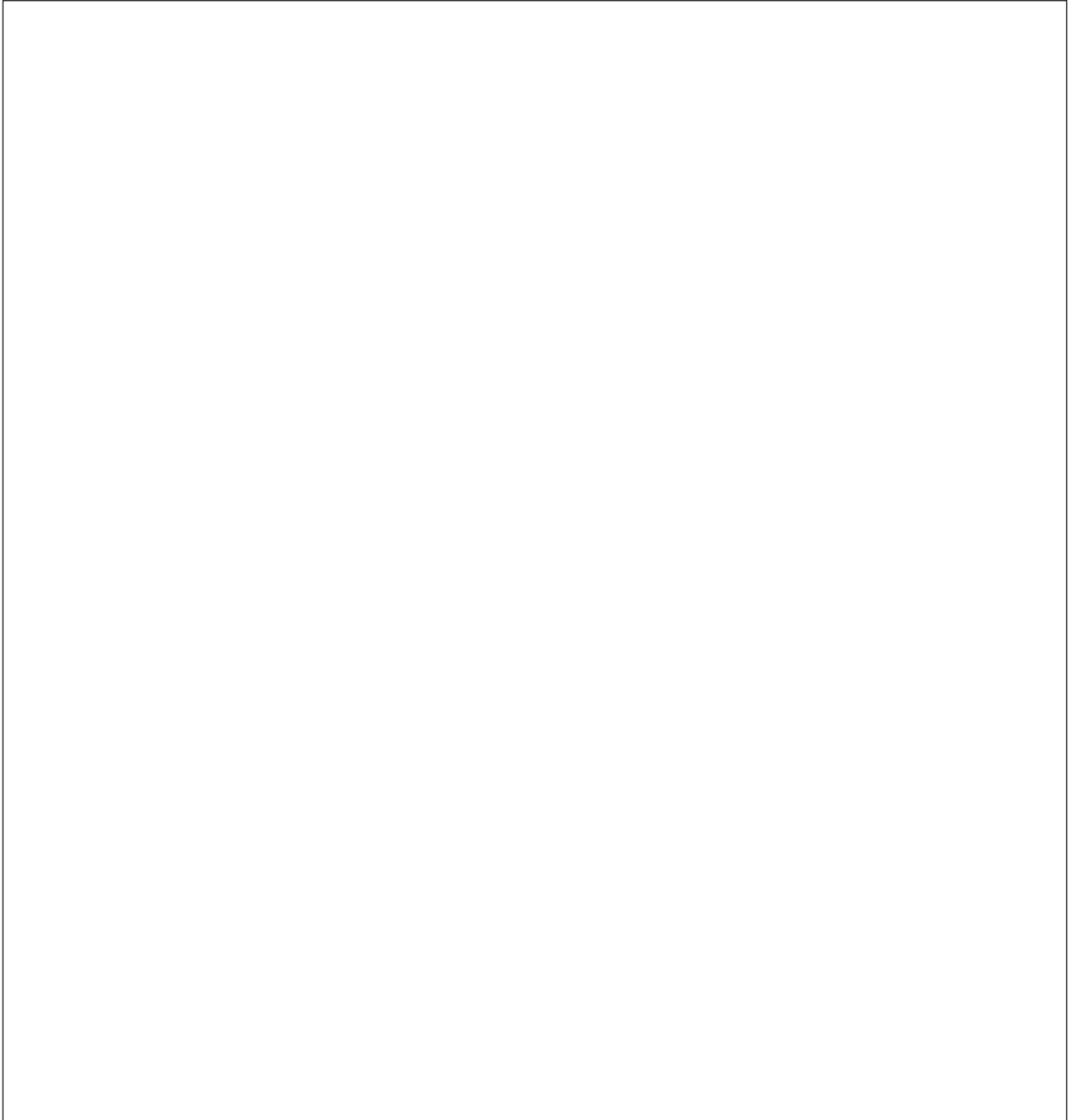
2 .....

*(2 marks)*

**QUESTION 5 CONTINUES ON THE NEXT PAGE**

**Turn over ►**

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



(5 marks)

**Question 6 is about computer aided design and computer aided manufacture.  
You should spend about 5 minutes on this question.**

**6** 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)*

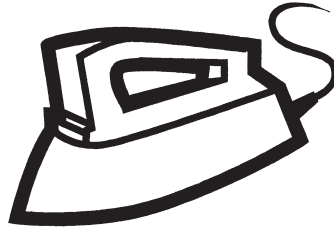


**TURN OVER FOR THE NEXT QUESTION**

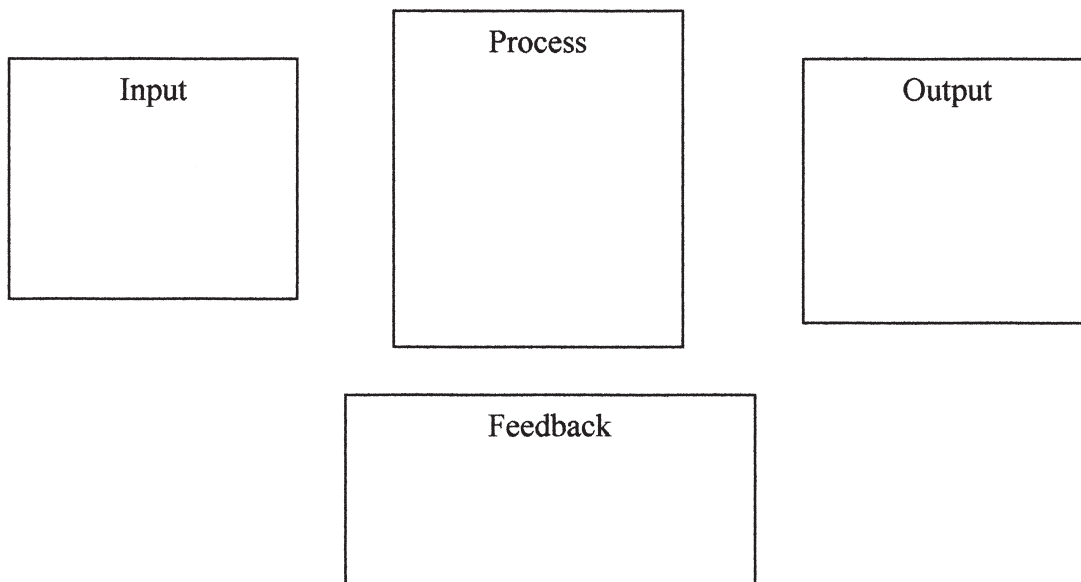
**Turn over ►**

**Question 7 is about control systems.  
You should spend about 5 minutes on this question.**

- 7 The iron shown below makes use of a control system.



Complete the system diagram below to describe the operation of the iron.



(6 marks)



**Question 8 is about product evolution.  
You should spend about 10 minutes on this question.**

**8** Products are usually developed as a result of *market pull* or *technological push*.

(a) Explain what each of these terms means.

(i) Market pull .....  
.....  
.....  
(3 marks)

(ii) Technological push .....  
.....  
.....  
(3 marks)

(b) Name **one** product for each of (a)(i) and (a)(ii).

(i) Market pull product .....  
.....  
(2 marks)

(ii) Technological push product .....  
.....  
(2 marks)

**END OF QUESTIONS**

10

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