

Surname						Other Names					
Centre Number						Candidate Number					
Candidate Signature											

For Examiner's Use

General Certificate of Secondary Education
June 2008

**DESIGN AND TECHNOLOGY
(RESISTANT MATERIALS TECHNOLOGY)
Written Paper
Higher Tier**

**3545/H
H**



Monday 2 June 2008 9.00 am to 11.00 am

<p>For this paper you must have:</p> <ul style="list-style-type: none"> • a pen, a pencil, a ruler, an eraser, a pencil sharpener and coloured pencils • an insert of colour photographs (enclosed).

For Examiner's Use			
Question	Mark	Question	Mark
1		9	
2			
3			
4			
5			
6			
7			
8			
Total (Column 1)		→	
Total (Column 2)		→	
TOTAL			
Examiner's Initials			

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. Answers written in margins or on blank pages will not be marked.
- Do all rough work in this book. Cross through any work you do not want to be marked.
- Show the working of your calculations.

Information

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



Questions 1 and 2 on this paper relate to the **Design Brief** given below.

Design Brief

A manufacturer of outdoor seating wishes to extend its range of products to include outdoor furniture that is suitable for a family picnic.

You are to produce **three** different design ideas for outdoor furniture that is suitable for a family picnic.

Your design ideas should focus on the following situations:

Situation 1 picnic furniture that is suitable for use by young children at the zoo

Situation 2 picnic furniture that is suitable for use by a family at a country park

Situation 3 picnic furniture that can be easily transported by car.



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

Question 1 is about the **Design Specification**.

You are advised to spend about 5 minutes on this question.

1 Give **five** design requirements of outdoor furniture that is suitable for a family picnic.

Explain each of your answers.

Requirement 1

Explanation

.....

(2 marks)

Requirement 2

Explanation

.....

(2 marks)

Requirement 3

Explanation

.....

(2 marks)

Requirement 4

Explanation

.....

(2 marks)

Requirement 5

Explanation

.....

(2 marks)

10

Turn over ►



Question 2 is about design ideas.

You are advised to spend about 40 minutes on this question.

2 Study the information given in the **Design Brief** (page 2) and your **Design Specification** (page 3).

Use this information to help you sketch **one** design idea for **each** situation given in the **Design Brief**.

Remember to:

- add notes to explain your sketches,
- evaluate each design idea.

Marks will be awarded for:

- three different design ideas, *(3 × 6 marks)*
- quality of sketches, *(6 marks)*
- quality of notes, *(3 marks)*
- quality of evaluations. *(3 × 2 marks)*

Situation 1 picnic furniture that is suitable for use by young children at the zoo

Evaluation

.....

.....



Situation 2 picnic furniture that is suitable for use by a family at a country park

Evaluation
.....
.....

Situation 3 picnic furniture that can be easily transported by car

Evaluation
.....
.....



Question 3 is about making.

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

3 Study the cup holder shown in **Figure 1** on the insert of colour photographs.

Use notes and sketches to show details of an industrial process which could be used to manufacture the cup holder.

This product will be manufactured in a quantity of 50 000.

Marks will be awarded for:

- a suitable method of manufacture, *(10 marks)*
- quality of notes and sketches. *(4 marks)*



Question 4 is about materials.

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

4 Study the serving spoons shown in **Figure 2** on the insert of colour photographs.

Name **one** suitable, *specific* material which could have been used to make each serving spoon.

Give **two** reasons for **each** choice.

Serving spoon A

Material (1 mark)

Reason 1
..... (1 mark)

Reason 2
..... (1 mark)

Serving spoon B

Material (1 mark)

Reason 1
..... (1 mark)

Reason 2
..... (1 mark)

Serving spoon C

Material (1 mark)

Reason 1
..... (1 mark)

Reason 2
..... (1 mark)



Question 5 is about systems.

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

5 A mountain bike is made up of a number of different mechanical systems.

Study the mountain bike shown in **Figure 3** on the insert of colour photographs.

5 (a) Name the mechanism labelled as **Part A**.

.....
(1 mark)

5 (b) Give **one** advantage that this mechanism has over a belt drive mechanism.

Explain your answer.

Advantage
(1 mark)

Explanation
.....
(1 mark)

5 (c) Mechanisms need regular maintenance.

5 (c) (i) Identify **one** mechanism other than **Part A** which needs regular maintenance that can be found on a mountain bike.

.....
(1 mark)



5 (c) (ii) Make a sketch of your chosen mechanism.

(4 marks)

5 (c) (iii) Describe how this mechanism should be maintained.

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

(4 marks)

5 (c) (iv) Explain why regular maintenance of machinery is important.

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

(4 marks)



Question 6 is about health and safety.





You are advised to spend about 5 minutes on this question.

6 Study the safety symbols shown in the table below.

Complete the table below by:

- explaining the meaning of each symbol,
- describing a process where you would expect to see this symbol.

One example has been completed for you.

Symbol	Meaning	Process
	<i>Safety glasses must be worn</i>	<i>Drilling a piece of metal</i>
		
		
		
		
		

(10 marks)

10



Question 7 is about ergonomics and anthropometrics.

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

7 Study the computer mouse shown in **Figure 4** on the insert of colour photographs.

7 (a) Identify **and** describe the ergonomic features of the computer mouse.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(6 marks)

7 (b) Explain how anthropometric data has been used by the designer when designing the computer mouse.

.....

.....

.....

.....

.....

.....

.....

(4 marks)

<hr style="width: 50%; margin: 0 auto;"/> <p>10</p>
--

Turn over ►



Question 8 is about design modelling.

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

8 When making a model of the computer mouse (shown in **Figure 4** on the insert of colour photographs) the designer may have used a ‘smart’ material.

8 (a) (i) Name a suitable ‘smart’ material which could be used to make a prototype of the computer mouse.

.....
(1 mark)

8 (a) (ii) Explain the advantages of using this ‘smart’ material.

.....
.....
.....
.....
.....
.....
.....
(4 marks)

8 (b) Designers make use of computer software to produce virtual models of their designs.

Explain the advantages **and** disadvantages of computer modelling.

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
(6 marks)



Question 9 is about social, moral and environmental issues.

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

- 9 Designers and manufacturers must be aware of the social and moral implications of their products.
- 9 (a) Give **three** reasons why computer games are considered by some parents to be socially irresponsible products. Explain each of your answers.

Reason 1

Explanation.....

.....
(2 marks)

Reason 2

Explanation.....

.....
(2 marks)

Reason 3

Explanation.....

.....
(2 marks)

Question 9 continues on the next page

Turn over ►



9 (b) Give **three** social, moral or environmental factors that **manufacturers** must consider to ensure that their products will be acceptable. Explain your answers.

Factor 1

Explanation.....

.....

(2 marks)

Factor 2

Explanation.....

.....

(2 marks)

Factor 3

Explanation.....

.....

(2 marks)

END OF QUESTIONS

12



There are no questions printed on this page

**DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED**



There are no questions printed on this page

**DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED**



**Design and Technology
(Resistant Materials Technology)
Full Course
Higher Tier**

H

Insert

For use with the Written Paper

Figure 1



This insert page should **not** be sent to the examiner.

Figure 2

Serving spoon A



Serving spoon B



Serving spoon C



Figure 3

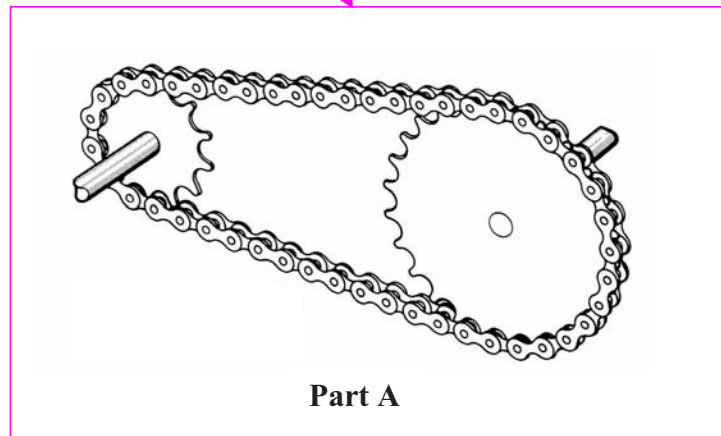


Figure 4



Permission to reproduce all copyright material has been applied for. In some cases efforts to contact copyright-holders have been unsuccessful and AQA will be happy to rectify any omissions of acknowledgements in future papers if notified.

Copyright © 2008 AQA and its licensors. All rights reserved.

INSERT TO TP/Jun08/3545/H