

Surname					Other Names				
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For Examiner's Use

General Certificate of Secondary Education
June 2007

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

**3555/H
H**



Friday 25 May 2007 9.00 am to 10.30 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).

Time allowed: 1 hour 30 minutes

Instructions

- Use blue or black ink or ball-point pen. Use pencil and coloured pencils only for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- Answer the questions in the spaces provided.
- 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 100.
- The marks for questions are shown in brackets.
- You are reminded of the need for good English and clear presentation in your answers.

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

Questions 1 to 3 on this paper relate to the **Design Brief** given below.

Design Brief

A manufacturer of CD and DVD storage systems wishes to extend its range of products to include computer games storage systems.

You are to produce **two** different design ideas for a computer games storage system.

Your design ideas should focus on the following situations:

Situation 1 a design for a young child

Situation 2 a design which can be given away inside a computer games magazine.

Examples of typical computer games are shown below.

Due to copyright issues, the examples of two typical computer games have been removed for electronic production.

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 for a computer games storage system.

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 30 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 idea.

Marks will be awarded for:

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

Situation 1 a design for a young child

Evaluation:

.....

Situation 2 a design which can be given away inside a computer games magazine

In Question 3 you will be asked how this idea will be manufactured in a quantity of 50 000.

Evaluation:
.....

25

Turn over for the next question

Turn over ►

Question 3 is about making.

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

- 3** Use notes and sketches to show details of an industrial process which could be used to manufacture your idea for **Situation 2**.

This product will be given away inside a computer games magazine which has a circulation of 50 000.

Marks will be awarded for:

- a suitable method of manufacture, *(10 marks)*
- quality of sketches, *(2 marks)*
- quality of notes. *(2 marks)*

Question 4 is about marketing and advertising.

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

4 (a) Before a product is designed it is useful to carry out market research.

(i) List **three** different methods of carrying out market research.

Method 1:

Method 2:

Method 3:

(3 marks)

(ii) Explain why it is important to carry out market research.

.....

.....

.....

(2 marks)

(b) Once a product has been manufactured it must then be advertised.

(i) List **three** different methods of advertising a product.

Method 1:

Method 2:

Method 3:

(3 marks)

(ii) Explain why it is important to advertise a product.

.....

.....

.....

(2 marks)

Question 5 is about health and safety.

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

5 Study the personal safety equipment shown in **Figure 1** on the insert of colour photographs.

(a) Complete the table below by:

- naming the personal safety equipment,
- giving an example of a process where it would be used,
- identifying a hazard it prevents.

Personal safety equipment	Name	Process	Hazard
A			
B			

(6 marks)

(b) Give **three** ways in which the use of CAM (computer aided manufacture) has improved safety within the industrial workplace.

1:

.....

(1 mark)

2:

.....

(1 mark)

3:

.....

(1 mark)

Question 6 is about materials and finishes.

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

6 Study the remote control holders shown in **Figure 2** on the insert of colour photographs.

(a) Name **one** suitable, *specific* material which could have been used to make each remote control holder.

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

Remote control holder A

Material:
(1 mark)

Reason 1:
.....
(1 mark)

Reason 2:
.....
(1 mark)

Remote control holder B

Material:
(1 mark)

Reason 1:
.....
(1 mark)

Reason 2:
.....
(1 mark)

(b) Name **one** suitable, *specific* finish for the chosen material for **Remote control holder A**.

.....
(1 mark)

7

Turn over ►

Question 7 is about product analysis.

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

7 Study the two power drills shown in **Figure 3** on the insert of colour photographs.

Advances in materials and manufacturing technology have enabled designers to make several improvements to power drills.

Identify **three** improved features that **Drill A** has when compared to **Drill B**.

Explain how each improvement helps the user.

Feature 1:
(1 mark)

How it helps the user
.....
.....
(2 marks)

Feature 2:
(1 mark)

How it helps the user
.....
.....
(2 marks)

Feature 3:
(1 mark)

How it helps the user
.....
.....
(2 marks)

Question 8 is about using ICT.

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

8 (a) Identify **three** different ways in which ICT could be used when carrying out research.

Use 1:
.....
(1 mark)

Use 2:
.....
(1 mark)

Use 3:
.....
(1 mark)

(b) Give **three** advantages of using CAM (computer aided manufacture), rather than making products by traditional methods.

Advantage 1:
.....
(1 mark)

Advantage 2:
.....
(1 mark)

Advantage 3:
.....
(1 mark)

Turn over for the next question

6

Turn over ►

Question 9 is about quality control.

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

9 Figure 4 on the insert of colour photographs shows a holder for an MP3 player.

The holder has been cut and bent from one piece of acrylic.

(a) Describe **one** method of ensuring that all the pieces of acrylic are cut to the same size and shape when making a batch of ten holders in a school workshop.

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

(2 marks)

(b) Describe **one** method of ensuring that all the pieces of acrylic are bent to the same angle when making a batch of ten holders in a school workshop.

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

(2 marks)

(c) Explain the importance of carrying out quality control checks when manufacturing products.

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

(6 marks)

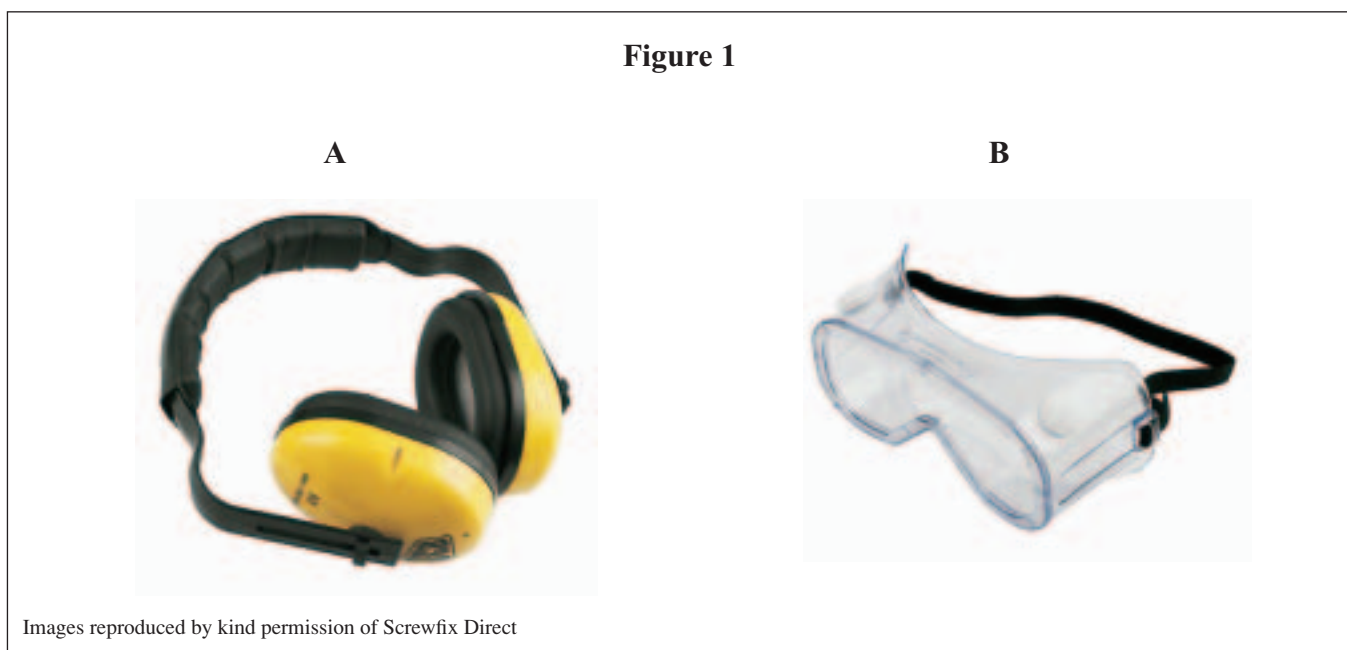
END OF QUESTIONS

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

H

Insert

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Figure 2

Wooden remote control holder

Remote control holder A

Plastic remote control holder

Remote control holder B

Figure 3

Drill A



Drill B



Image of Drill A reproduced by kind permission of Screwfix Direct

Figure 4

