

**GENERAL CERTIFICATE OF SECONDARY EDUCATION
MANUFACTURING (DOUBLE AWARD)**

4880

UNIT 3: Application of Technology
TUESDAY 5 JUNE 2007

Afternoon

Time: 1 hour 30 minutes

Candidates answer on the question paper.
No additional materials are required.



Candidate
Name

Centre
Number

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Candidate
Number

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INSTRUCTIONS TO CANDIDATES

- Write your name, Centre number and Candidate number in the boxes above.
- Answer **all** the questions.
- Show all working for calculations.
- Use blue or black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure you know what you have to do before starting your answer.
- Do **not** write in the bar code.
- Do **not** write outside the box bordering each page.
- WRITE YOUR ANSWER TO EACH QUESTION IN THE SPACE PROVIDED. ANSWERS WRITTEN ELSEWHERE WILL NOT BE MARKED.

INFORMATION FOR CANDIDATES

- The number of marks for each question is given in brackets [] at the end of each question or part question.
- Marks will be awarded for the use of correct conventions.
- The total number of marks for this paper is **100**.
- Dimensions are in mm unless stated otherwise.
- Please note that the instruction 'discuss' denotes that you should:
 - identify **three** relevant issues/points raised by the question;
 - explain why you consider **two** of these issues to be relevant; and
 - use **one** specific example or piece of evidence to support your answer.

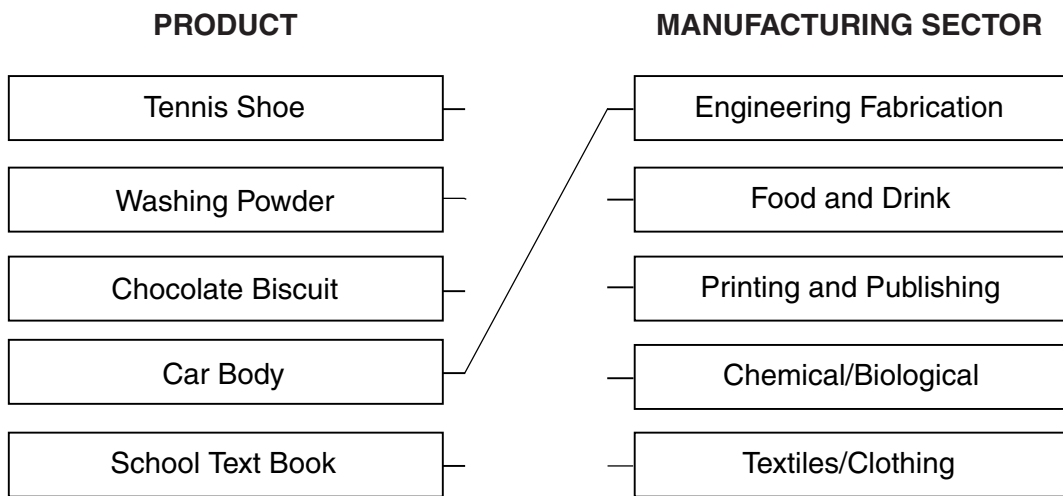
FOR EXAMINER'S USE	
Question 1	
Question 2	
Question 3	
Question 4	
Question 5	
Question 6	
Question 7	
Question 8	
TOTAL	

This document consists of **15** printed pages and **1** blank page.

1 (a) Manufacturing sectors produce different products.

Complete the links below to identify the sector which makes the products listed.

One has been done for you.



[4]

- (b) For **three** of the products listed in part (a) identify:
- a modern technology used by each product; and
 - the technology it replaces.

An example has been done for you.

Product	Modern Technology	Technology Replaced
Car body	Laser cutting	Stamping
	[1]	[1]
	[1]	[1]
	[1]	[1]

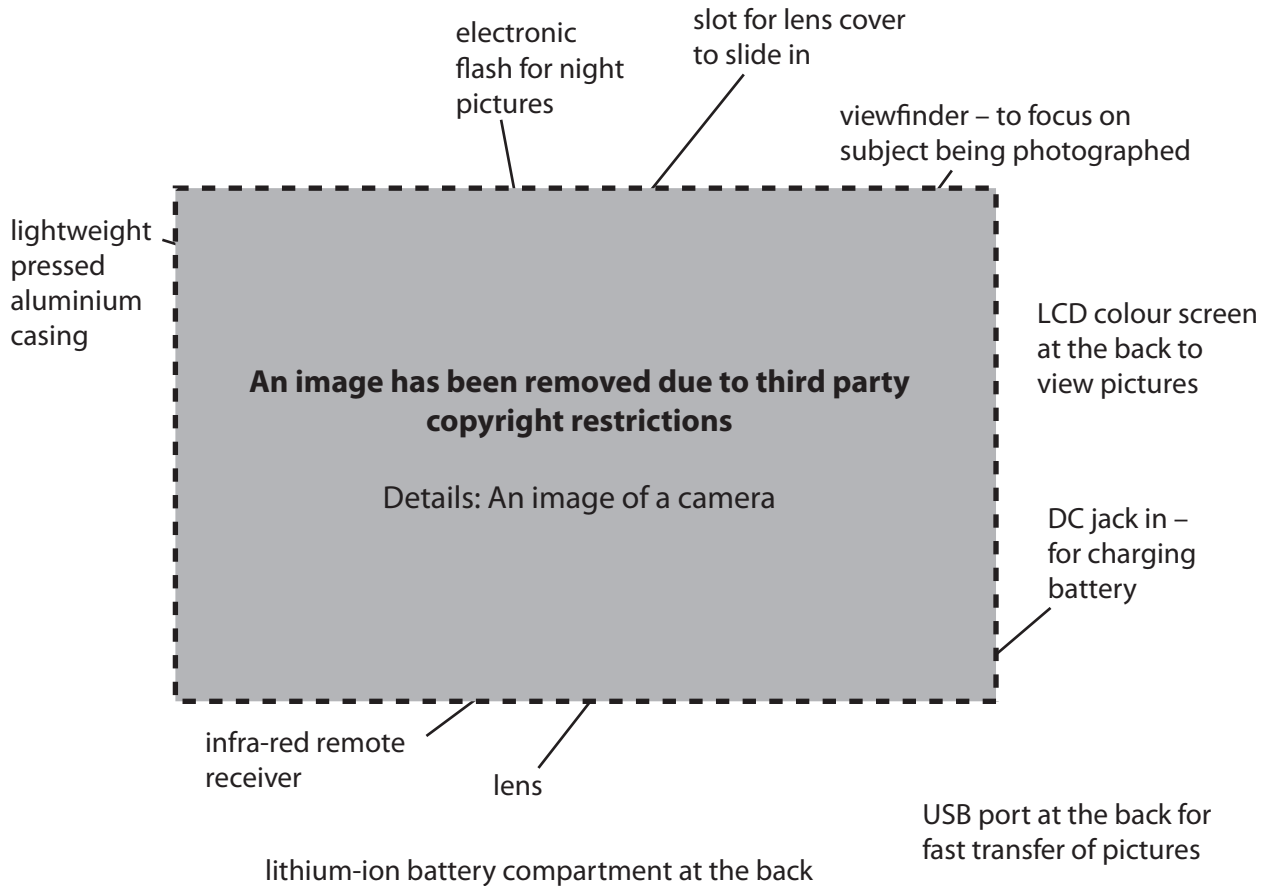
- (c) Complete the table below for **one** of the modern technologies you gave in part (b).

Modern Technology	Advantage of using the Modern Technology

[2]

- 2 The sketch and notes below explain how technology and materials are used in the design and manufacture of a digital camera.

Example product: Digital Camera



Choose a different product and use sketches and notes to explain how technology and materials are used in its design and manufacture.

Your answer must include:

- the technologies used;
- how materials/components are used; and
- the structure and form of the product.

[4]

[4]

[4]

Use the example of the digital camera to help plan your answer.

Marks will NOT be given for information copied from the example or for repetition of points.

Your chosen product for **Question 2**

3 Modern technology has improved many products.

The use of modern technology can:

- reduce the weight of a product;
- make a product stronger;
- make a product easier to use; or
- make a product safer.

(a) State **one** example of a product that uses modern technology to reduce its **weight** and name the modern technology used.

Product[1]

Modern technology[1]

(b) State **one** example of a product that uses modern technology to make it **stronger** and name the modern technology used.

Product[1]

Modern technology[1]

(c) State **one** example of a product that uses modern technology to make it **easier to use** and name the modern technology used.

Product[1]

Modern technology[1]

(d) State **one** example of a product that uses modern technology to make it **safer** and name the modern technology used.

Product[1]

Modern technology[1]

(e) Describe **two** benefits for a company's workforce of using modern technology.

Benefit 1

.....

.....[2]

Benefit 2

.....

.....[2]

4 In manufacturing, robotics can be used in the processing, assembly, finishing and packaging of products.

(a) Explain **three** advantages for a manufacturing company when **using** robotics.

Advantage 1
.....
.....[2]

Advantage 2
.....
.....[2]

Advantage 3
.....
.....[2]

(b) Explain **two** disadvantages for a manufacturing company when **introducing** robotics.

Disadvantage 1
.....[2]

Disadvantage 2
.....[2]

(c) Explain how robotics are used in packaging products.

.....
.....
.....[2]

(d) After the products are made they are dispatched to the customer.

Explain how ICT is used in the tracking of dispatched goods.

.....
.....
.....[2]

- 5 The stages of making a product are:
- designing;
 - production planning;
 - material supply and control;
 - processing – production; and
 - packaging and dispatch.

(a) Complete the table below to describe how ICT is used in the making of a product.

Stage	Description of How ICT is Used
Designing	[2]
Production planning	[2]
Material supply and control	[2]
Processing – production	[2]
Packaging	[2]

(b) State **two** ways in which ICT could be used to save money when making a product.

1[1]

2[1]

(c) Large amounts of energy are often used during the making of a product.

Explain how **control technology** could be used to reduce the amount of energy when making a product.

.....

.....

.....[2]

- 6 (a) An effective manufacturing team can be built through:
- allocating appropriate roles and responsibilities;
 - setting and agreeing individual and team targets;
 - good communication;
 - motivation; and
 - creating an appropriate working environment.

Complete the table below by explaining the importance of each of the effective team requirements.

Requirements	Explanation of Importance
Allocating appropriate roles and responsibilities	[2]
Setting and agreeing individual and team targets	[2]
Good communication	[2]
Motivation	[2]
Creating an appropriate working environment	[2]

- (b) A production plan is used to provide information about the type and quantity of a product to be made.

Explain why modifications to the production plan may become necessary.

.....

.....

.....[2]

7 Modern and Smart Materials are increasingly being used in products.
 Many materials have a coating applied to them.

(a) (i) Give **one** example of a material and the modern applied coating.

.....[1]

(ii) Explain why a coating might be applied to a material.

.....

[2]

(b) From the modern materials listed below choose **two** materials with which you are familiar.

Modern Materials	✓
Gortex	
Nomex	
SOFT <i>switch</i> fabric	
Probiotic Yoghurt	
Tofu	
Textured Vegetable Protein	

Complete the table below for the **two** modern materials you have chosen.

Modern Material 1	Description of the Properties and Uses
	[3]
Modern Material 2	Description of the Properties and Uses
	[3]

(c) Liquid Crystal Displays (LCD) are increasingly being used in modern products.
Explain the properties and possible uses of LCDs.

.....

.....

.....

.....[3]

15
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