



GENERAL CERTIFICATE OF SECONDARY EDUCATION

MANUFACTURING

Unit 3: Application of Technology

4880

Candidates answer on the Question Paper

OCR Supplied Materials:

None

Other Materials Required:

None

Monday 17 May 2010
Afternoon

Duration: 1 hour 30 minutes



Candidate Forename		Candidate Surname	
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Centre Number						Candidate Number				
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INSTRUCTIONS TO CANDIDATES

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your Candidate Number, Centre Number and question number(s).

INFORMATION FOR CANDIDATES

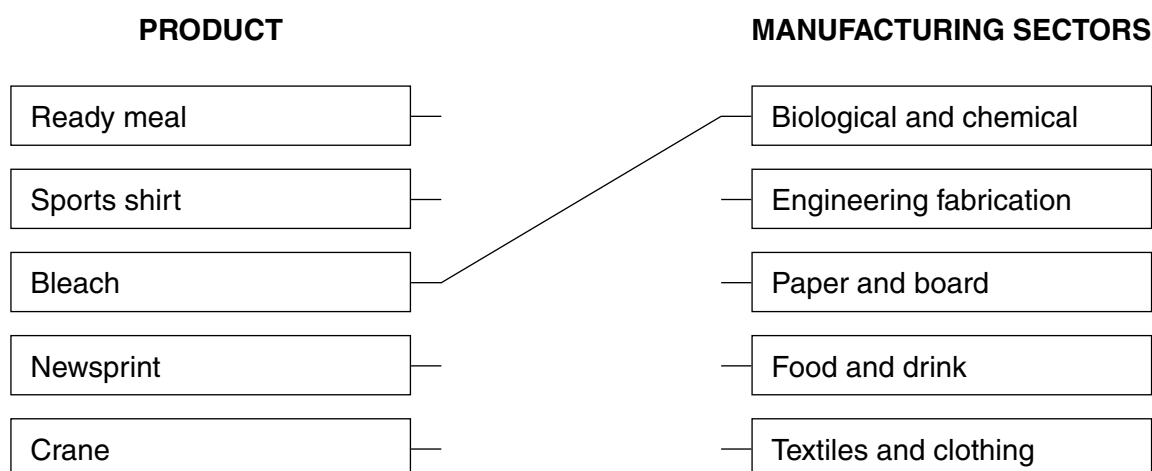
- The number of marks for each question is given in brackets [] at the end of each question or part question.
- Marks will be awarded for the use of correct conventions.
- The total number of marks for this paper is **100**.
- Dimensions are in mm unless stated otherwise.
- Please note that the instruction '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;
 - use **one** specific example or piece of evidence to support your answer.
- This document consists of **16** pages. Any blank pages are indicated.

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1 Manufacturing sectors produce different products.

- (a) Complete the links below to identify which manufacturing sector makes the products listed. One has been done for you.



[4]

- (b) For **three** of the products above, complete the table to show:

- **one** example of technology used in each product; and
- **one** benefit of using that technology in the product.

An example has been done for you.

Product	Technology used	Benefit
Bleach	Chemical thickener	Makes the bleach stick to glazed surfaces better
	[1]	[1]
	[1]	[1]
	[1]	[1]

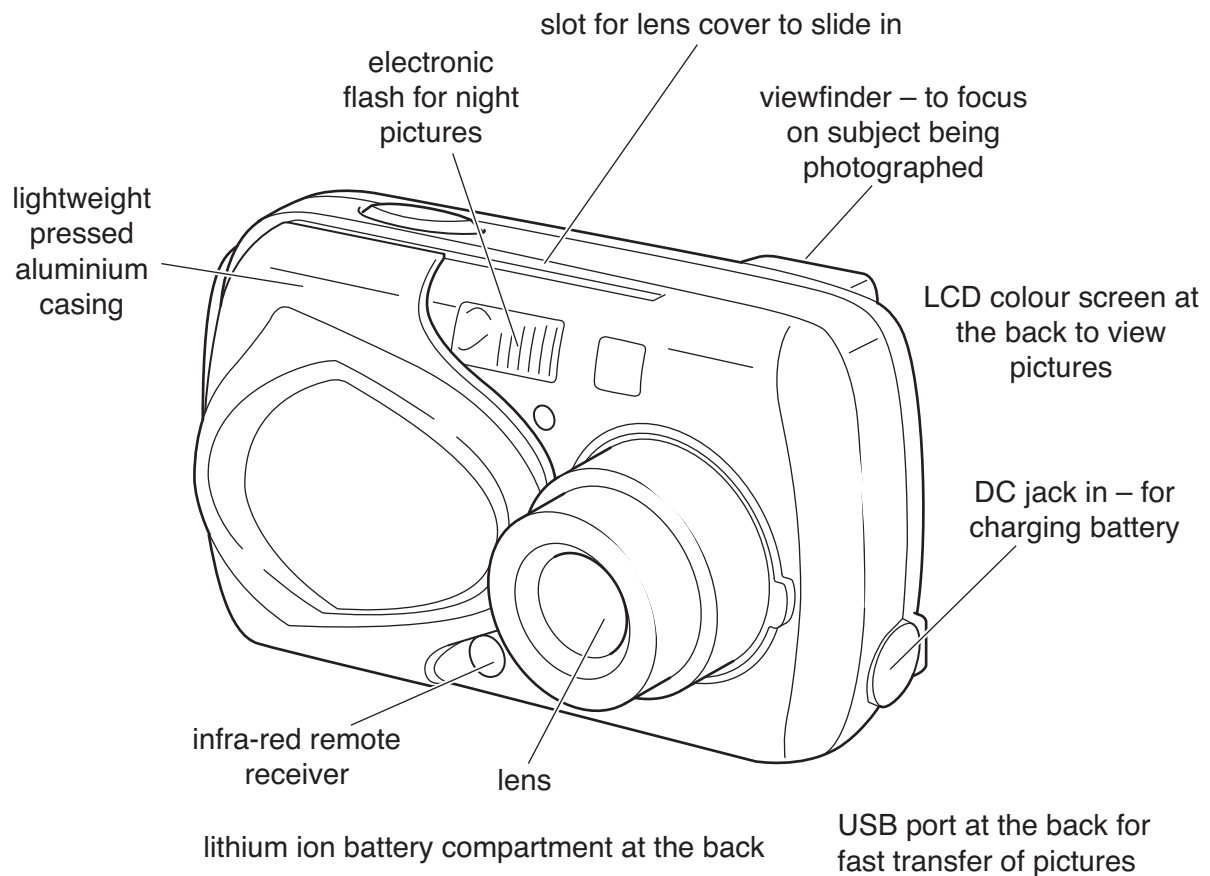
- (c) Name **two** different products from the **biological and chemical** sector.

1 [1]

2 [1]

- 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; [4]
- how materials/components are used; and [4]
- the structure and form of the product. [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 repeated points.

Your chosen product for **Question 2**

3 A list of stages of production is shown.

- Assembly
- Processing
- Finishing
- Packaging

Choose **two** stages of production from the list. For each one complete the tables for a product you have made as part of a team by:

- naming **two** tools or items of equipment used;
- describing how your team worked safely; and
- describing how your team ensured quality.

Name of product you have made as part of a team

Chosen stage of production:

.....

Tools/equipment used:

1 [1]

2 [1]

How your team worked **safely**

.....

.....

.....

.....

..... [2]

How your team ensured **quality**

.....

.....

.....

.....

..... [2]

Chosen stage of production:

.....

Tools/equipment used:

1 [1]

2 [1]

How your team worked **safely**

.....

.....

.....

.....

..... [2]

How your team ensured **quality**

.....

.....

.....

.....

..... [2]

4 The use of modern materials has improved many products.

Examples of types of improvement are:

- reduced weight;
- ease of use;
- improved product safety; and
- reduced impact on the environment.

- (a) State **one** example of a product that uses a modern material to **reduce its weight**. Name the material used.

Product [1]

Material [1]

- (b) State **one** example of a product that uses a modern material to make it **easier to use**. Name the material used.

Product [1]

Material [1]

- (c) State **one** example of a product that uses a modern material to make it **safer for the end user**. Name the material used.

Product [1]

Material [1]

- (d) State **one** example of a product that uses a **different** modern material to make it **safer for the workforce making it**. Name the material used.

Product [1]

Material [1]

- (e) Explain, using **one** example, the benefits of using a smart material.

.....

 [3]

- (f) Explain how reducing the weight of a product has affected its **impact on the environment**.

.....

 [3]

- 5 (a) Manufacturing companies use Information and Communication Technology (ICT) in a number of ways.

- (i) Describe **two** benefits to a manufacturing company of using Computer Aided Design (CAD).

1

 [2]

2

 [2]

- (ii) Describe **one** benefit to the end-user when **CAD** is used in manufacturing.

.....

 [2]

- (b) Give **two** examples of how **communication technology** is used by manufacturing companies.

1

 [2]

2

 [2]

Effective teamwork is important for manufacturing companies.

- (c) Use **two** examples to explain how effective teamwork benefits a large manufacturing company.

1

 [2]

2

 [2]

6 Benefits of using robotics technology in manufacturing production include:

- improved reproducibility;
- increased rate of production; and
- reduced waste.

(a) Explain, using examples, how robotics technology can achieve each of these benefits.

Marks will not be given for repeated points.

(i) Improved reproducibility

.....

.....

.....

..... [3]

(ii) Increased rate of production

.....

.....

.....

..... [3]

(iii) Reduced waste

.....

.....

.....

..... [3]

(b) Explain why robotics technology is **not** used for some production processes.

.....

.....

.....

..... [3]

7 Four methods of manufacture are:

- Outsourced;
- manual;
- semi-automated; and
- fully automated.

Complete the tables to show, for each method of manufacture:

- a typical product; and
- an explanation why the product is usually made by that method of manufacture.

One has been done for you.

Outsourced	Typical Product Brake assemblies for a car
Explanation Specialist manufacturers near motor works means that they can be bought in as required for Just In Time production and they pay later which helps cash flow	

Manual	Typical Product [1]
Explanation [3]	

Semi-automated	Typical Product [1]
Explanation [3]	

Fully automated	Typical Product [1]
Explanation [3]	

8 Please note that the instruction 'discuss' means that you should:

- identify **three** relevant issues/points raised by the question;
- explain why you consider **two** of these issues to be relevant;
- use **one** specific example or piece of evidence to support your answer.

(a) Discuss the impact of automated production on the quality of manufactured products.

..... [6]

(b) Discuss the financial implications for a manufacturing company of introducing automated production.

..... [6]

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