

# SAMPLE PRODUCT DESIGN

# GCSE EXAMINATION PAPER

**CENTRE NUMBER**

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**CANDIDATE NUMBER**

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SAMPLE PAPER1

**SURNAME** \_\_\_\_\_

**FORENAME(S)** \_\_\_\_\_

**CANDIDATE SIGNATURE** \_\_\_\_\_

## 2 HOURS ALLOWED

### Materials required for this examination:

- normal writing and drawing instruments
- a calculator
- a protractor.

### Instructions to candidates:

- Use black ink or black ball-point pen. Use pencil 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. Do not write on blank pages.
- Do all rough work in this book. Cross through any work that you do not want to be marked.

### Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 128.
- The question in Section A relates to the context referred to in the Preliminary Material that was previously issued.
- All dimensions are given in millimetres unless otherwise stated.
- You are reminded of the need for good English and clear presentation in your answers.

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# SECTION A

This question is about designing.

You are advised to spend about 30 minutes on this question.

People take part in a range of leisure activities. Food and drink is required for lunch time and there is a need for a suitable carrier.

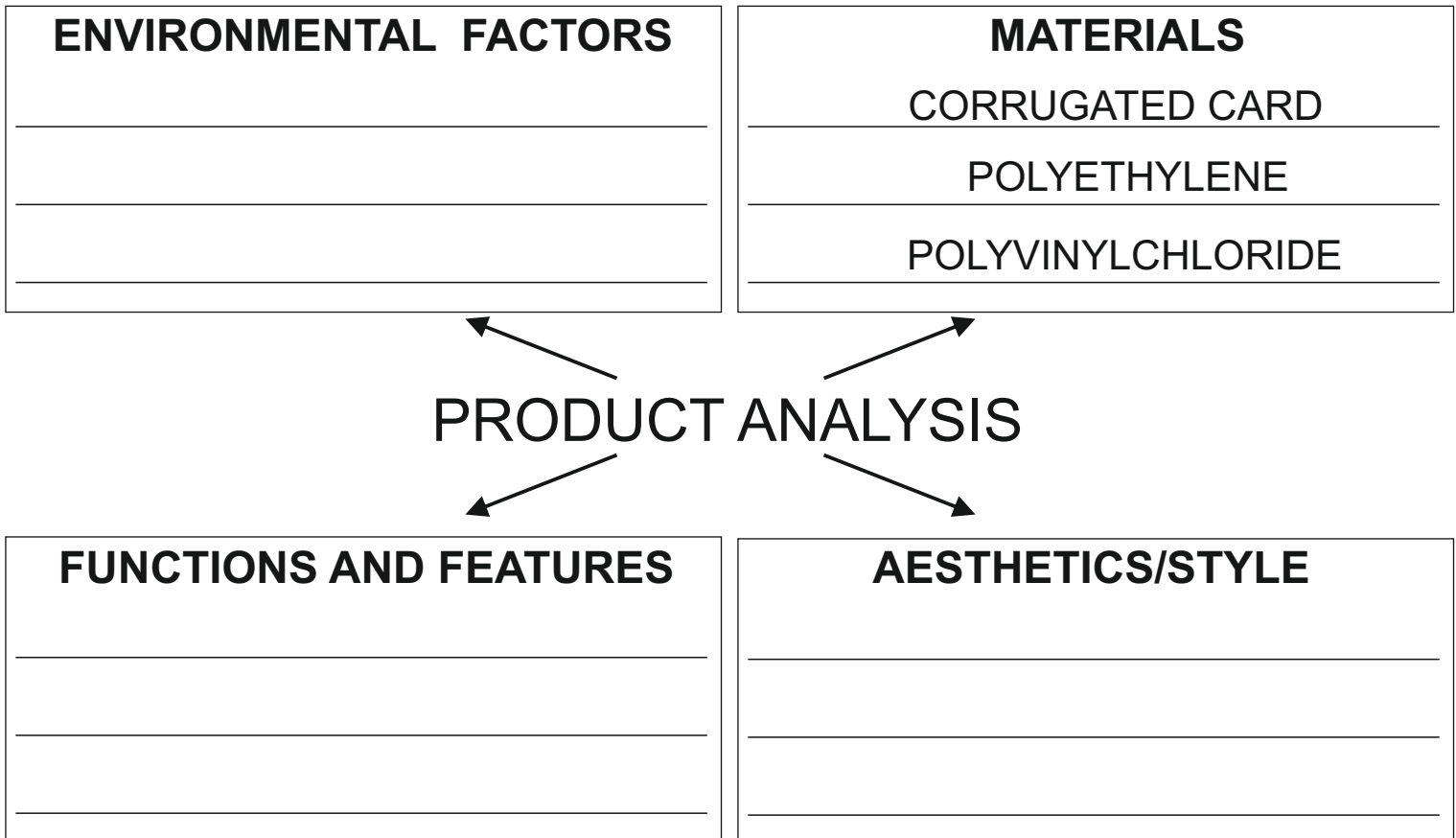
## LEISURE ACTIVITIES



1a. A product analysis for designing a food carrier involves, investigating a range of points.

Complete the diagram below.

One of the points has been completed for you. 3 X 2 marks



**1b. You are to design a REUSABLE food carrier to contain and protect its contents. The carrier will be used by people who enjoy participating in leisure activities and need to carry a meal / lunch with them.**

In the space below, use notes and sketches to design a suitable food carrier for leisure activities.

Marks will be given for:

- an original outcome
- details regarding the use of materials and the techniques and processes required for its manufacture.
- health and safety considerations and functionality.
- the level of communication and presentation.

**15 marks**

**1c. Evaluate your design and its suitability as a food carry, for people taking part in leisure activities. 4 marks**

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**1d. Your product is to be manufactured through batch production. What is batch production and why is it suitable for your product? 4 marks**

TO HELP YOU ANSWER  
THIS QUESTION

<http://www.technologystudent.com/joints/scalep1.htm>  
[http://www.technologystudent.com/joints/rev\\_batch1.html](http://www.technologystudent.com/joints/rev_batch1.html)

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TO HELP YOU ANSWER  
THIS QUESTION

<http://www.technologystudent.com/joints/oiltoplas1.html>  
<http://www.technologystudent.com/designpro/plastic2.html>

**1e. Describe the life cycle of your product? 4 marks**

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*Add that at the end of the products life that polypropylene (PP) can be deposited at a recycling bank and recycled so that it can be reused to manufacture new products.*

## Section B

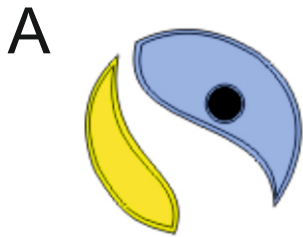
Answer **all** questions in the spaces provided.

This question is focussed on materials and also symbols.

TO HELP YOU ANSWER  
THIS QUESTION

<http://www.technologystudent.com/despro2/drink7.htm>

2a. Three packaging symbols are seen below. Complete the table by adding the symbol letter to the correct description. **3 marks**



LETTER	DESCRIPTION
	Displayed on a product it means that the manufacturer/retailer has agreed to the 'British Toy and Hobby Associations' Code of practice. It is a consumer symbol that represents the manufacturers promise to conform to all relevant safety information.
	This means that the contents of the package has been produced in the Third World and that the producer (ie. the farmer) has received a fair and realistic price. subsidises.
	The product inside the package, has been tested to European safety standards. The symbol is normally applied to non-food products such as electronic products or toys. However, it may still be applied to the packaging, as a reference to the package itself being safe.

TO HELP YOU ANSWER THIS QUESTION

[http://www.technologystudent.com/despro\\_fish/laminate1.html](http://www.technologystudent.com/despro_fish/laminate1.html)

[http://www.technologystudent.com/despro\\_fish/laminate2.html](http://www.technologystudent.com/despro_fish/laminate2.html)

2b. The products shown below are manufactured from laminated card.



Write two reasons why this type of material is suitable for the products above. 2 marks

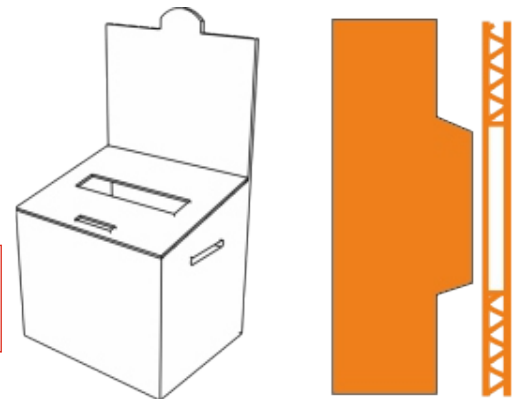
REASON 1:

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REASON 2:

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2c. The large clothes collection box is manufactured from corrugated polypropylene. Write two reasons why this material is suitable. 2 marks



TO HELP YOU ANSWER THIS QUESTION

[http://www.technologystudent.com/despro\\_fish/charity13.html](http://www.technologystudent.com/despro_fish/charity13.html)

REASON 1:

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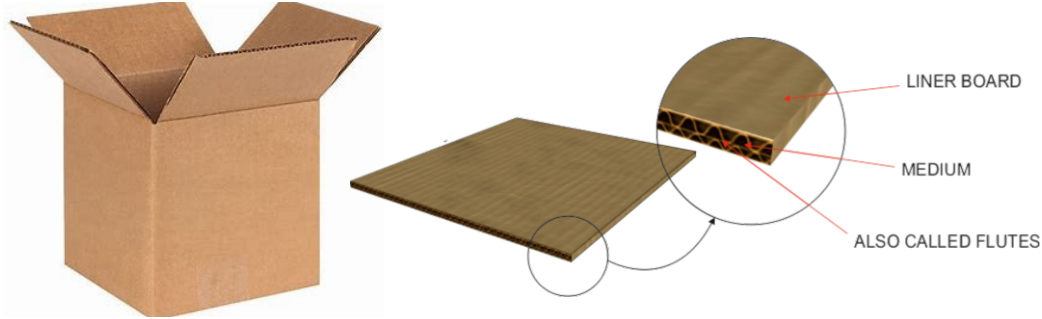
REASON 2:

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TO HELP YOU ANSWER  
THIS QUESTION

<http://www.technologystudent.com/despro2/crdpap2.htm>

2d. The packaging box is manufactured from corrugated card. Write two reasons why this material is suitable. *2 marks*



REASON 1:

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REASON 2:

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**2e. What are aroma pigments and how do they work? Include a sketch in your answer. 3 marks**

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**2f. Give one example of the practical application of aroma pigments. Include a sketch in your answer. 3 marks**

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**3. This question is concerned with health and safety**

**3a. The kettle has been designed to be repaired when it eventually breaks down. 2 X 2 marks**

TO HELP YOU ANSWER THIS QUESTION

<http://www.technologystudent.com/prddes1/repair1.html>

**List two advantages of a product that can be repaired, has over a product that cannot be repaired and must be replaced.**

**ADVANTAGE 1:**

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**ADVANTAGE 2:**

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**3B. Identify one of the labelled parts of the kettle and describe one fault that can occur and how it can be a safety issue. 2 marks**

PART: \_\_\_\_\_

FAULT AND SAFETY ISSUE: \_\_\_\_\_

**3C. A common hazard, it's risk level and associated controlled measure(s) are written in the table below. For your material area specialism, describe two hazards, their risk levels and control measures. Use the blank tables for your answers. 2 x 4 marks**

HAZARD	RISK - LEVEL	CONTROL MEASURE(S)
<i>Possibility of sharp, extremely hot steel 'swarf', flying at high speed in the direction of the operator.</i>	<i>Medium level possibility, due to the physical properties of sheet steel.</i>	<i>Fit Guard. Ensure guard is in position. Goggles supplied. Foot stop for emergency. Staff training, so that drilling is controlled correctly by the operator and the risks are understood. Appropriate protective clothing provided.</i>

HAZARD - 1	RISK - LEVEL	CONTROL MEASURE(S)
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

HAZARD - 2	RISK - LEVEL	CONTROL MEASURE(S)

**4. This question relates to environmental issues**

**4a. Explain each of the following environmental terms. 3 x 2 marks**

TO HELP YOU ANSWER  
THIS QUESTION

<http://www.technologystudent.com/prddes1/lifecy1.html>

**Sustainability:**

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TO HELP YOU ANSWER  
THIS QUESTION

<http://www.technologystudent.com/prddes1/upcycling1.html>

**Upcycling:**

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TO HELP YOU ANSWER  
THIS QUESTION

<http://www.technologystudent.com/prddes1/susenv1.html>

<http://www.technologystudent.com/joints/sustain1.html>

**Sustainability:**

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4b. Marketing/advertising, through the use ICT (Information Communication Technology), helps to promote new products.

Describe how ICT is used to promote new products to potential customers.  
4 marks

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4c. Select one of the products shown in the table below. Then, describe two of the features that mean it is suitable for manufacture on a production line. 2 x 2 marks

<p><b>STEEL CHAIR</b></p>  <p>TO HELP YOU ANSWER THIS QUESTION</p>	<p><b>PACKAGE</b></p>  <p>TO HELP YOU ANSWER THIS QUESTION</p>	<p><b>POLYPROP CHAIR</b></p>  <p>TO HELP YOU ANSWER THIS QUESTION</p>
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PRODUCT: \_\_\_\_\_

FEATURE 1: \_\_\_\_\_

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FEATURE 2: \_\_\_\_\_  
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\_\_\_\_\_  
\_\_\_\_\_

**4d. For the product you selected in question 4c - name and describe one of the industrial processes used in it's manufacture. 4 marks**

TO HELP YOU ANSWER  
THIS QUESTION

<http://www.technologystudent.com/prddes1/barcelona2.html>  
<http://www.technologystudent.com/grp08/pack1.html>  
<http://www.technologystudent.com/prddes1/polyprop2.html>

INDUSTRIAL PROCESS: \_\_\_\_\_

DESCRIPTION OF MANUFACTURING PROCESS  
INCLUDE NOTES AND A SKETCH(S)

**5. This set of questions is concerned with production methods and product systems.**

**TO HELP YOU ANSWER  
THIS QUESTION**

<http://www.technologystudent.com/joints/scalep1.htm>

[http://www.technologystudent.com/joints/revcard\\_oneoff1.html](http://www.technologystudent.com/joints/revcard_oneoff1.html)

[http://www.technologystudent.com/joints/rev\\_batch1.html](http://www.technologystudent.com/joints/rev_batch1.html)

**5a. What is the difference between Prototype Production and Batch Production? Include an example of a product manufactured by each system. 4 marks**

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TO HELP YOU ANSWER  
THIS QUESTION

<http://www.technologystudent.com/prdds1/prodpack14.html>

5b. The image below shows a design for the packaging for a soft drink.

Add notes and sketches to give relevant details about the suitable materials, manufacturing and finishing processes. 4 marks





**5c. The packaging for the soft drink is manufactured through a process called die cutting. In the space below, describe this process. Use notes and sketches.**

**3 marks**

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**5d. The packaging is checked through a process called Quality Control.**

**What is Quality Control ? 4 marks**

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**5e. Describe three quality control measures that would be applied to the packaging, to ensure that it is manufactured to the highest possible quality.**

**3 marks**

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TO HELP YOU ANSWER  
THIS QUESTION

<http://www.technologystudent.com/designpro/prtpro5.htm>

**5f. Colour is applied to the die cut package, through a process called lithography.**

**In the space below, describe this process. Use notes and a sketch(s). 8 marks**

**5g. Describe / explain the advantages of using biodegradable inks, for printing on the surface of the packaging. 4 marks**

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**6. This set of questions relates to human factors and inclusivity**

**6a. Explain the term ANTHROPOMETRICS. 2 marks**

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**6b. Explain the term ERGONOMICS. 2 marks**

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**6c. The diagram opposite shows five important measurements that must be considered when setting up a computer workstation.**

**For each of the labelled dimensions, explain why it is important. 5 x 2 marks**

**MEASUREMENT 'A':**

**MEASUREMENT 'B':**

**MEASUREMENT 'C':**

**MEASUREMENT 'D':**

**MEASUREMENT 'E':**

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**7. This set of questions is about Inclusivity and products.**

**7a. What is an inclusive design? 2 marks**

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**7b. Why can this adjustable office chair be regarded as an inclusive product?  
4 marks**

TO HELP YOU ANSWER  
THIS QUESTION

<http://www.technologystudent.com/prddes1/pod1.html>



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