

Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

Forename(s)

Candidate signature

GCSE DESIGN AND TECHNOLOGY: PRODUCT DESIGN

Unit 1 Written Paper

Monday 27 June 2016

Morning

Time allowed: 2 hours

Materials

For this paper you must have:

- a black pen
- a pencil
- a ruler
- an eraser
- a pencil sharpener
- coloured pencils.

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. Do not write outside the box around each page or on blank pages.
- Do all rough work in the answer book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 120.
- 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. Quality of Written Communication will be assessed in Question 4(b).



Section A

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

1 This question is about designing.

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

Charities and fund-raising organisations use collection boxes to raise money. A charity has identified a need for a new and innovative flat pack collection box. It will require assembly before use.



1 (a) In the table below give **three** design criteria which will make a new and innovative collection box fit for purpose.

Give **one** reason for each design criterion.

An example is given for you.

[6 marks]

Example design criterion	Reason
Must be flat pack	To save storage space when being transported from the place of manufacture to the end user.

Design criterion	Reason
1 _____ _____ _____ _____	_____ _____ _____ _____
2 _____ _____ _____ _____	_____ _____ _____ _____
3 _____ _____ _____ _____	_____ _____ _____ _____

Question 1 continues on the next page

Turn over ►



1 (b) In the space provided, use notes and sketches to show your design for a flat pack collection box.

Marks will be given for:

- a creative solution that meets your design criteria and includes surface decoration
- specific names of materials and construction techniques
- details of how to assemble your collection box before use
- how to open your collection box to get the money out.

[15 marks]

The images below are given to inspire you.



A large, empty rectangular box with a thin black border, occupying most of the page. It is intended for the student to write their answer to the question on the previous page.

Turn over ►



0 5

1 (e) Explain what the following packaging symbols mean.

[4 marks]





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Turn over for the next question

Turn over ►



Section B

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

2 This question is about manufacturing systems and organising production.

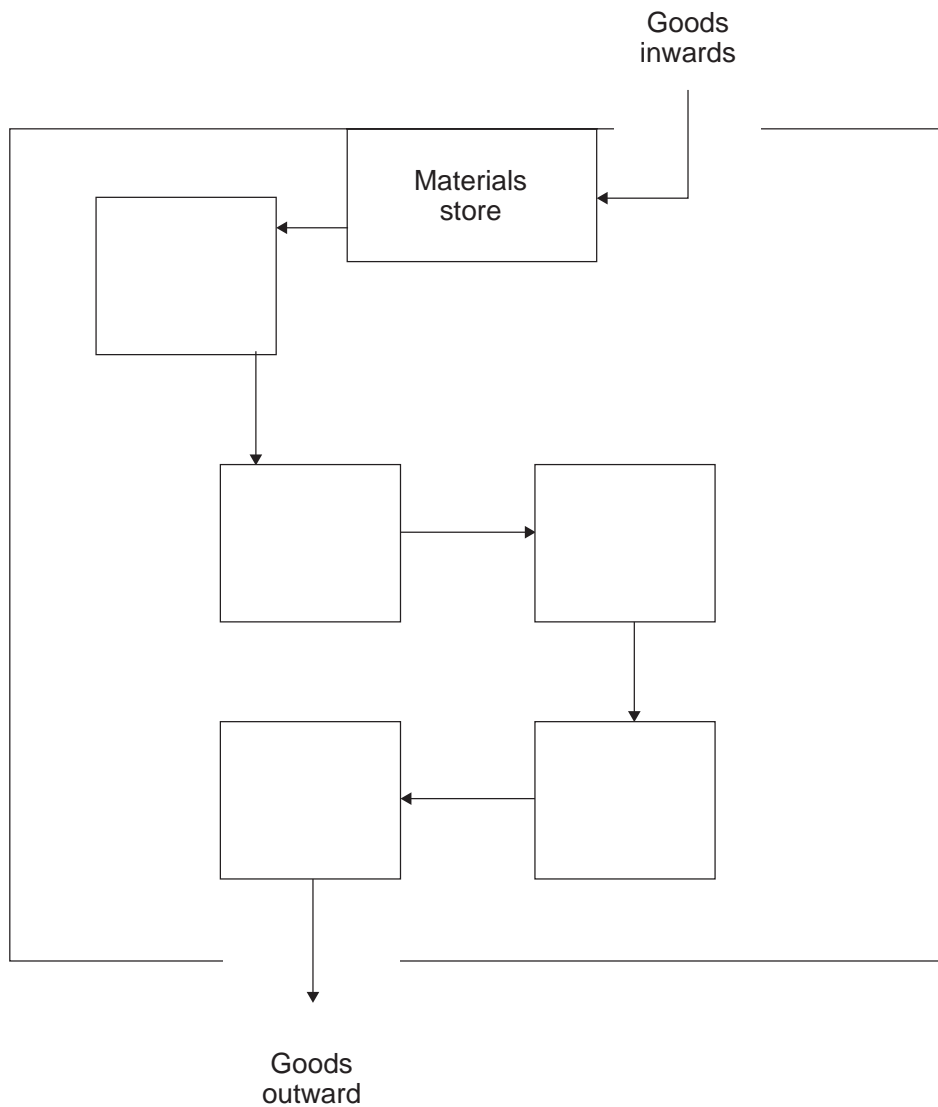
You are advised to spend about 15 minutes on this question.

2 (a) The empty boxes on the factory floor plan below show five workstations.

Label each empty box in the plan with the appropriate letter from the table below.

A	B	C	D	E
Assembly	Measuring and marking out	Cutting and shaping	Material Preparation	Packing

[4 marks]



2 (b) Efficient working methods are a common feature of modern manufacturing systems.

2 (b) (i) What is meant by the term 'Just in Time' (JIT) production?

[3 marks]

2 (b) (ii) What is meant by the term 'continuous production'?

[3 marks]

Question 2 continues on the next page

Turn over ►



2 (c) Why do manufacturers use barcodes?

[3 marks]

2 (d) The manufacture of products can create waste materials.

Describe ways that computer-aided design (CAD) and computer-aided manufacture (CAM) can reduce waste.

[4 marks]



Turn over for the next question

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

Turn over ►



3 This question is about selecting the correct processes to make products.

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

3 (a) Choose **three** of the products listed in the box below. Complete the table by matching your **three** chosen products to the correct process. Do not use any product more than once. Explain why the process is suitable for each of the **three** products you have chosen.

[3 x 3 marks]

Fruit juice container	Polyester/cotton shirt	Wooden salad servers	Ceramic tea pot
Sponge cake	Christmas cracker	Toffee apple	Silk tie
Steel climbing frame	Plastic washing-up bowl	Card tissue box	Digital radio

Process	Product	Reason for process suitability
Injection moulding		<hr/> <hr/> <hr/> <hr/>
Blending		<hr/> <hr/> <hr/> <hr/>
Lamination		<hr/> <hr/> <hr/> <hr/>



Aeration		<hr/> <hr/> <hr/> <hr/>
Surface mounting		<hr/> <hr/> <hr/> <hr/>
Welding		<hr/> <hr/> <hr/> <hr/>
Perforation		<hr/> <hr/> <hr/> <hr/>
Screen Printing		<hr/> <hr/> <hr/> <hr/>
Glazing		<hr/> <hr/> <hr/> <hr/>

Turn over ►



3 (b) All the products below use stock forms of material in their fabrication.

		
Coat	Fruit pie	Flat pack furniture
		
Sketch pad	Supermarket meal box	Shampoo bottle
		
Garden shed	Glazed vase	Wine bottle holder

3 (b) (i) Choose **one** of the products above.

Name a specific main material used to make the product

[1 mark]

Product _____

Material _____



3 (b) (ii) Name a stock form of your chosen main material in part (b)(i).

[1 mark]

Stock form _____

3 (c) Explain why materials are available in stock forms.

[3 marks]

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Turn over for the next question

Turn over ►



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ANSWER IN THE SPACES PROVIDED**



4 This question is about packaging and the environment.

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

There are six main reasons for packaging.

4 (a) Complete the table below. Three explanations have been done for you.

[6 marks]

Reasons for packaging	Explanation
Preserve	Products like food need to be stopped from spoiling due to temperature changes or bacteria.
Inform	<hr/> <hr/> <hr/> <hr/>
Protect	<hr/> <hr/> <hr/> <hr/>
Transport	<hr/> <hr/> <hr/> <hr/>
Contain	Ensure small parts of a product are kept together so that none are lost, eg a child's toy.
Display	Make the product more appealing to the consumer so that they will buy it.

Turn over ►



14

Turn over for the next question

Turn over ▶



5 This question is about manufacturing in quantity.

You are advised to spend about 20 minutes on this question.

A Sunday market is being started in your area. You have decided to make a product to sell at the market.

Choose **one** of the products from the list below.

house name plate	apron	organic meat pies	desk calendar
herb growing pot	kitchen memo board	bird table	pencil holder

5 (a) In the space below, sketch your chosen product. Show the main features.

In part (b) you will be asked how to manufacture your product in quantity.

[3 marks]

My chosen product is _____

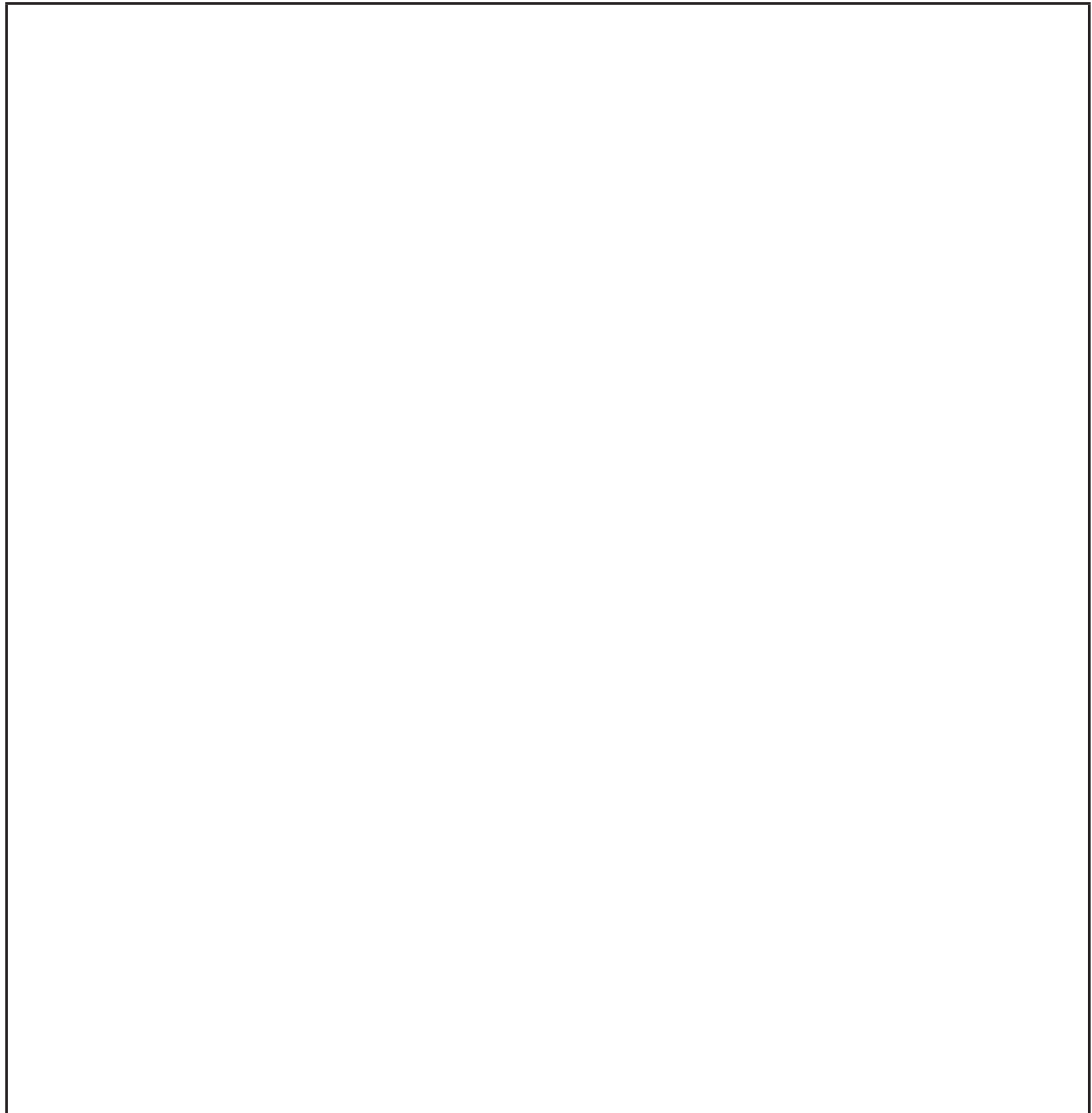


5 (b) Use notes and sketches to show how a batch of 50 of your product could be manufactured.

Marks will be given for:

- a clear layout and correct order of processes
- identification of appropriate tools and equipment
- quality of communication.

[12 marks]



Tools and equipment I would use:



Turn over ▶



5 (c) Explain how you would test the quality of your product.

[4 marks]

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6 This question is about product marketing.
 You are advised to spend about 15 minutes on this question.
 The images below are examples of point of sale displays.

			
<p>Wall display</p>	<p>Floor standing display</p>	<p>Counter top display</p>	<p>Rotating display</p>

6 (a) (i) Give **two** benefits to the retailer of a point of sale display.

[2 marks]

1 _____

2 _____

6 (a) (ii) Give **two** benefits to the consumer of a point of sale display.

[2 marks]

1 _____

2 _____

Turn over ►



6 (b) Designers develop a brand identity as part of a marketing strategy.

Explain the term 'brand identity'. Give examples.

[4 marks]



6 (c) The image below is of a sample promotional leaflet.



How might a leaflet be used for marketing purposes?

[3 marks]

6 (d) Explain how digital media can be used to market products.

[4 marks]

Turn over ►



7 This question is about consumer issues.

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

7 (a) Consumer groups test and compare products. The information they collect is available to consumers.

Describe the benefits of using information provided by consumer groups.

[4 marks]



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