

Candidate Name	Centre Number	Candidate Number

WELSH JOINT EDUCATION COMMITTEE  
General Certificate of Secondary Education



CYD-BWYLLGOR ADDYSG CYMRU  
Tystysgrif Gyffredinol Addysg Uwchradd

272/02

**GCSE  
DESIGN AND TECHNOLOGY**

**SHORT COURSE**

**FOCUS AREA: RESISTANT MATERIALS TECHNOLOGY**

(Higher Tier - Grades D to A\*)

P.M. TUESDAY, 5 June 2007

(1 Hour)

	<b>Leave Blank</b>
<b>Question 1</b>	
<b>Question 2</b>	
<b>Question 3</b>	
<b>Question 4</b>	
<b>TOTAL MARK</b>	

**ADDITIONAL MATERIALS**

You will need basic drawing equipment and coloured pencils for this examination.

**INSTRUCTIONS TO CANDIDATES**

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

Write your answers in the spaces provided in this booklet. Where the space is not sufficient for your answer, continue the answer at the back of the book, taking care to number the continuation correctly.

**INFORMATION FOR CANDIDATES**

The number of marks is given in brackets at the end of each question or part-question.

No certificate will be awarded to a candidate detected in any unfair practice during the examination.

*Answer all questions in the spaces provided.*

1. (a) A designer needs to carry out research before designing a new toy for a three-year-old child.



Some research activities are shown in the table below. Complete the table by stating what important information can be found from these activities. *One example has been done for you.* 3 × [2]

Research Activity	Outcomes of research
Talk to a three-year-old child	<i>To establish the types of activities that are popular with three-year-olds.</i>
Look at anthropometric data	..... .....
Read a book on child development	..... .....
Look at a materials properties website	..... .....

(b) Give **three** safety concerns that a parent may have when buying a toy. 3 × [1]

Concern 1: .....

.....

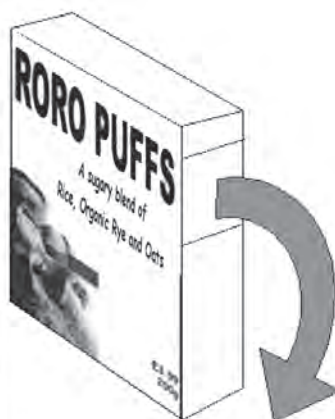
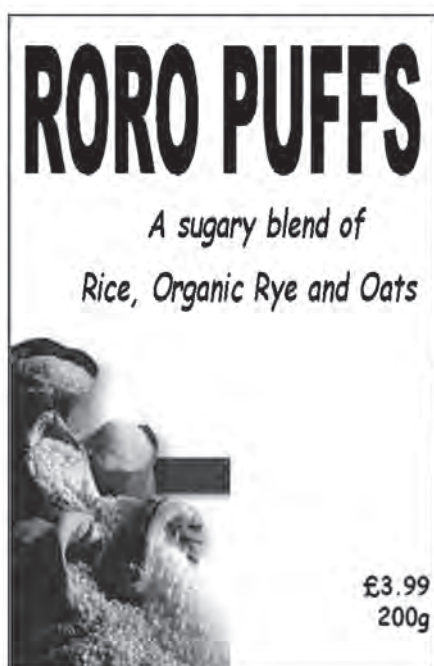
Concern 2: .....

.....

Concern 3: .....

.....

2. Sales of the breakfast cereal shown below are falling.



Ingredients: Rice, rye, oats, honey, sugar, salt.			
	Guideline daily amount	Each serving with milk	% guideline daily amount
Calories	2000kcal	170kcal	8%
Sugar	90g	27.8g	30%
Salt	6g	0.8g	14%
Saturated fat	20g	2.4g	12%
Fat	70g	4.0g	6%

- (a) Study the pictures shown and give **two** reasons why you think sales of this cereal have fallen. 2 × [2]




Reason 1: .....

.....

Reason 2: .....

.....

(b) The pictures below show three kettles.

			
Kettle	A	B	C
Cost	£4.99	£19.99	£37.99
Materials	White Plastic	Stainless Steel	Thermochromic Plastic
Where made	China	Europe	UK
Water capacity	1.5 Litres	1 Litre	2.3 Litres

- (i) Even though it is expensive, some people would decide to buy kettle C. Give **one** reason for this. [2]

.....  
.....

- (ii) Give **two** reasons why kettle A can be sold at this price.  $2 \times [2]$

Reason 1: .....

.....

Reason 2: .....

.....

- (iii) Kettle C uses a thermochromic plastic. Give **two** benefits of using this material.  $2 \times [2]$

Benefit 1: .....

.....

Benefit 2: .....

.....

3. (a) One part of the design process is called *development*. One development activity might be to consider a range of possible colours for a product. List **three** other activities that are part of development. 3 × [1]

Activity 1: .....

Activity 2: .....

Activity 3: .....

- (b) Name a specific ICT/CAD package and explain how it could be used to help with the development of a new product.

Name of package ..... [1]

Use in development ..... [2]

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

- (c) For a product of your choice, describe **two** benefits of using CAM (computer aided manufacturing) to make the product. 2 × [1]

Product .....

Benefit 1: .....

Benefit 2: .....

- (d) Describe **two** environmental issues that should be taken into account when *designing* products. 2 × [2]

Issue 1: .....

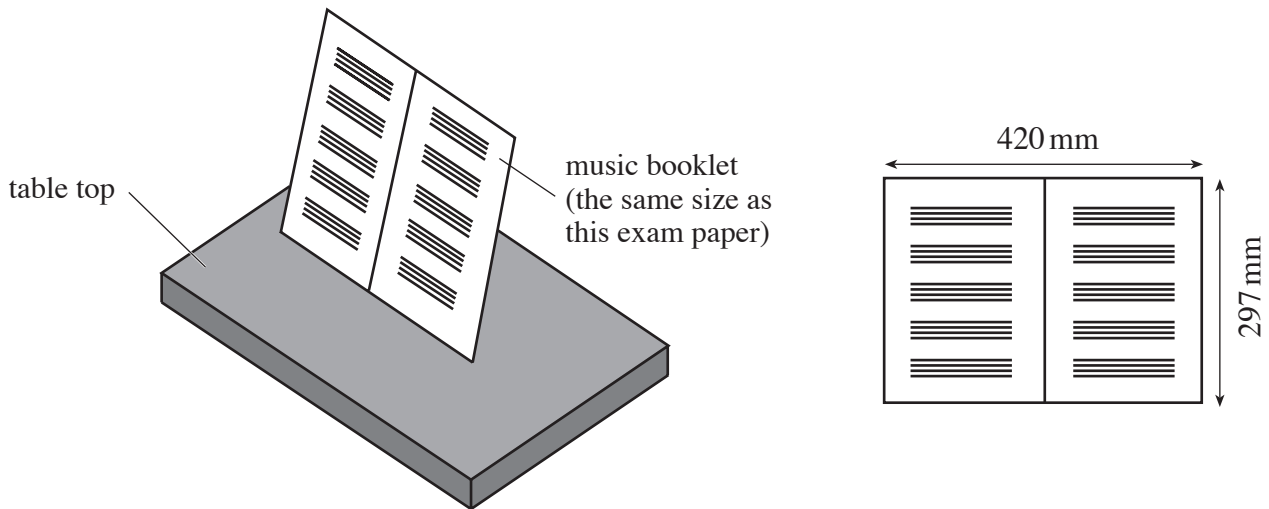
.....

Issue 2: .....

.....

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4. The music department in your school has asked you to design a portable table top stand to hold sheet music for use when playing instruments.



### Specification

The design must:

- be portable, stable and suitable for table top use;
- hold an A4 music booklet;
- enable the music to be easily read when playing an instrument;
- be able to be stored in a small space.

(a) **Sketch** your solution on the opposite page.

#### Marks will be awarded for:

- |                                                                 |     |
|-----------------------------------------------------------------|-----|
| (i) the design of a stand that is stable;                       | [3] |
| (ii) the design of a stand that can be stored in a small space; | [3] |
| (iii) constructional details of the stand;                      | [5] |
| (iv) showing how the sheet music stays securely in place;       | [3] |
| (v) <b>two</b> important dimensions;                            | [2] |
| (vi) quality of communication.                                  | [4] |



**Turn over for part (b)**

- (b) The music department has asked for twenty identical stands. Use notes and sketches to explain how you would ensure all the stands are identical. [5]

