

**GENERAL CERTIFICATE OF SECONDARY EDUCATION**  
**DESIGN AND TECHNOLOGY**  
**Resistant Materials**  
Sustainable Design

**A562**

Candidates answer on the question paper.

**OCR supplied materials:**  
None

**Other materials required:**  
None

**Monday 10 January 2011**  
**Afternoon**  
**Duration: 1 hour**



Candidate forename		Candidate surname	
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Centre number						Candidate number				
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**INSTRUCTIONS TO CANDIDATES**

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- 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).
- Answer **all** the questions in Section A **and** Section B.
- Do **not** write in the bar codes.

**INFORMATION FOR CANDIDATES**

- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this paper is **60**.
- Your quality of written communication is assessed in questions marked with an asterisk (\*).
- This document consists of **12** pages. Any blank pages are indicated.

**Section A**

Answer **all** questions.

You are advised to spend 15 minutes on this section.

On questions 1–5 **circle** your answer.

- 1** Which of the following is a renewable energy resource?
- (a) Gas
  - (b) Oil
  - (c) Solar
  - (d) Coal
- [1]**
- 2** The final stage of a life cycle assessment of a product is
- (a) Disposal of the product
  - (b) Transporting the product
  - (c) Rethinking the product
  - (d) Using the product
- [1]**
- 3** Anthropometrics is the name given to the measurement of
- (a) A product
  - (b) Production
  - (c) Sales
  - (d) People
- [1]**
- 4** An example of a sustainable resistant material is
- (a) Pine
  - (b) Acrylic
  - (c) Aluminium
  - (d) Gold
- [1]**

- 5 An example of a material that will deteriorate if left outside without a suitable surface treatment is
- (a) Polyvinylchloride (PVC)
  - (b) Mild steel
  - (c) Nylon
  - (d) Stainless steel
- [1]

6 State the meaning of the symbol shown



..... [1]

7 State the meaning of the term 'reforestation'.

..... [1]

8 What do the letters COSHH stand for?

..... [1]

9 State the meaning of the term 'eco footprint'.

..... [1]

10 Name the group of materials whose properties can change due to changes in pressure, force, light or temperature.

..... [1]

Decide whether each of the following is **True** or **False**.

Tick (✓) the box to show your answer.

	<b>True</b>	<b>False</b>	
<b>11</b> Grinding up thermoplastic products and remoulding them into new products is an example of primary recycling	<input type="checkbox"/>	<input type="checkbox"/>	<b>[1]</b>
<b>12</b> Biodegradable means that a product will rot naturally in the environment	<input type="checkbox"/>	<input type="checkbox"/>	<b>[1]</b>
<b>13</b> The recycling of aluminium drinks cans uses more energy than making new aluminium	<input type="checkbox"/>	<input type="checkbox"/>	<b>[1]</b>
<b>14</b> Cultural issues are when designers consider ways in which people behave and relate to each other	<input type="checkbox"/>	<input type="checkbox"/>	<b>[1]</b>
<b>15</b> Ergonomics is how products interact with people	<input type="checkbox"/>	<input type="checkbox"/>	<b>[1]</b>
			<b>Total [15]</b>

5  
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(c) Give **three** reasons why the can crusher can be considered an environmentally friendly product.

1 .....

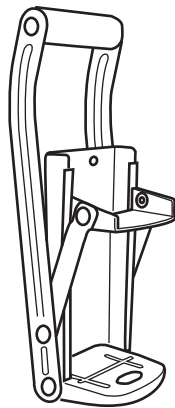
2 .....

3 .....

[3]

(d) When the can crusher is being used it often falls over.

Produce an annotated sketch to show how the design could be developed to improve the can crusher when in use.



[3]

(e) Give two factors which the designer would need to consider to enable the can crusher to be sold as an environmentally friendly product.

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

**Total [15]**

**Turn over**

17 Fig. 2 shows a garden table made from recycled plastic.

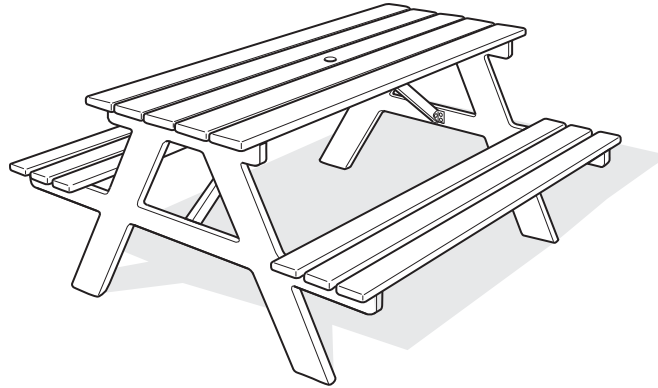


Fig. 2

(a) Name **two** user groups who may **not** find this table easy to use and give a reason why this design may not be suitable.

User group 1 .....  
Reason .....  
..... [3]

User group 2 .....  
Reason .....  
..... [3]

(b) The table is fastened together using bolts, nuts and washers.  
Name a specific material for these components which will not deteriorate when used outside.  
..... [1]

(c) Fig 3 shows a symbol moulded into each part of the table.

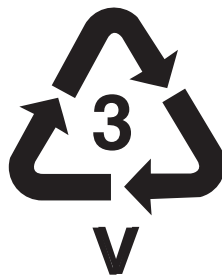


Fig. 3

Give **two** reasons why the information given by this symbol would be beneficial when disposing of the product at the end of its useful life.

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





18 (a) Explain **two** environmental issues associated with the manufacture of products.

Issue 1 .....  
.....  
.....  
..... [2]

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

(b) Give **two** reasons why many designers now refuse to design products which contain chlorofluorocarbons (CFCs).

1 .....  
..... [1]

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

(c) Describe **two** ways in which the energy needed to transport products from where they are manufactured to the consumer can be reduced.

1 .....  
.....  
.....  
.....

2 .....  
.....  
.....  
..... [4]

(d) Explain the meaning of 'Carbon offsetting'.

.....  
.....  
.....  
.....  
..... [3]

(e) Describe **one** practical way in which companies carry out 'Carbon offsetting'.

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

**Total [15]**

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