

**Thursday 31 May 2012 – Afternoon**

**GCSE DESIGN AND TECHNOLOGY Industrial Technology**

**A542/01 Sustainable Design**

Candidates answer on the Question Paper.

**OCR supplied materials:**

None

**Other materials required:**

None

**Duration:** 1 hour



Candidate forename		Candidate surname	
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Centre number						Candidate number				
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**MODIFIED LANGUAGE**

**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. HB 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 will be 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** Natural gas is a:
- (a) Non-renewable energy source
  - (b) Renewable energy source
  - (c) Green fuel
  - (d) Carbon neutral fuel
- [1]**
- 2** CO<sub>2</sub> is a:
- (a) Recyclable plastic
  - (b) Alloy of copper and zinc
  - (c) Finite energy resource
  - (d) Greenhouse gas
- [1]**
- 3** Hydro power is:
- (a) A non-renewable energy source
  - (b) A renewable energy source
  - (c) Derived from the wind
  - (d) Used to recycle water
- [1]**
- 4** Manufacturers consider environmental issues in order to:
- (a) Increase the safety of their products
  - (b) Maximise company profits
  - (c) Make their product look attractive in the environment
  - (d) Help to protect the earth's natural resources
- [1]**

5 Considering the views of others when designing products is an important:

- (a) Ergonomic concern
- (b) Social issue
- (c) Anthropometric concern
- (d) Sustainability issue

[1]

6 The term used to describe the internationalisation of products, labour and skills throughout the world is:

..... [1]

7 State what the symbol shown below means.



..... [1]

8 Name a product that can be made from recycled aluminium.

..... [1]

9 Identifying hazards in the working environment is known as:

..... [1]

10 Chlorofluorocarbons are commonly known by the abbreviation:

..... [1]

Are each of the following statements **true** or **false**?

Tick (✓) the box to show your answer.

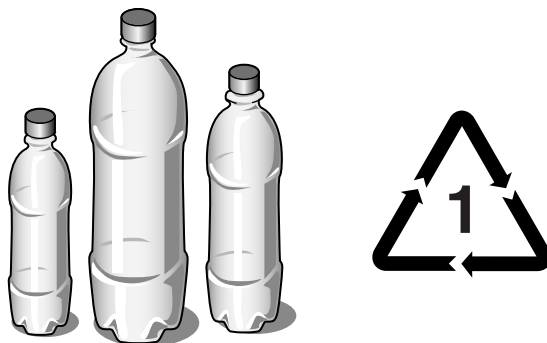
	True	False	
11 Not all plastics can be recycled	<input type="checkbox"/>	<input type="checkbox"/>	[1]
12 Sustainable products are all made from wood	<input type="checkbox"/>	<input type="checkbox"/>	[1]
13 Cultural issues are not linked to the design of products	<input type="checkbox"/>	<input type="checkbox"/>	[1]
14 Reforestation is good for the environment	<input type="checkbox"/>	<input type="checkbox"/>	[1]
15 Geothermal energy harms the environment	<input type="checkbox"/>	<input type="checkbox"/>	[1]
			<b>Total [15]</b>

**Section B**

Answer **all** questions.

You are advised to spend 45 minutes on this section.

- 16** Fig. 1 shows a range of plastic bottles with a symbol that can be found on them.



**Fig. 1**

- (a) (i)** Name the symbol shown in Fig. 1.

..... [1]

- (ii)** State what the number inside the symbol means.

..... [1]

- (iii)** Name **one** non-recyclable plastic.

..... [1]

**(b)** There are three main types of recycling.

Explain each type of recycling.

**(i)** Primary:

.....

.....

.....

.....

.....

..... [2]

**(ii)** Secondary:

.....

.....

.....

.....

.....

..... [2]

**(iii)** Tertiary:

.....

.....

.....

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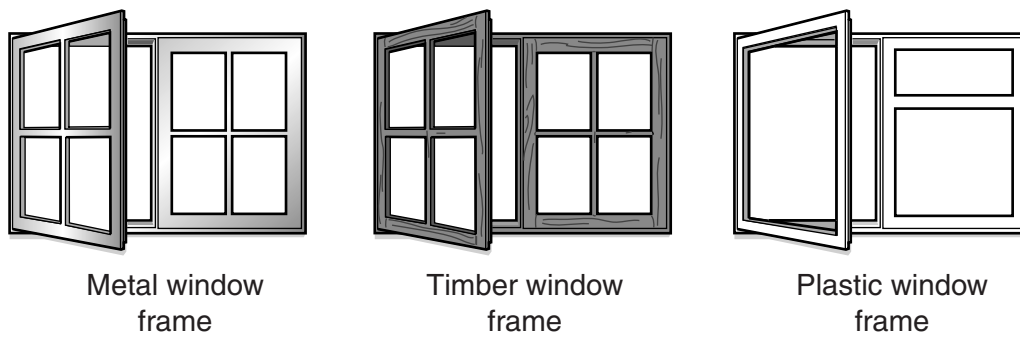
..... [2]

**(c)\*** Explain why it is important to consider sustainability in the design and manufacture of plastic products.

Handwriting practice lines (dotted lines on a grid background).

**Total [15]**

17 Fig. 2 shows three window frames, each made from a different material.



**Fig. 2**

(a) The wood for the timber window is sourced from a managed forest.

Describe what this means.

.....

.....

.....

..... [2]

(b) (i) Insert the missing word for the FSC in the space below.

Forestry ..... Council [1]

(ii) In the space below draw the FSC logo.

[2]



- (c) Describe the environmental impact caused by sourcing raw materials for making the metal and plastic windows.

.....

.....

.....

.....

.....

.....

.....

..... [4]

- (d) Many designers and manufacturers of windows have used eco-design to reduce the environmental impact of their activities.

Explain the term eco-design.

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.....

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.....

.....

.....

..... [3]

- (e) The windows shown in Fig. 2 are double glazed.

Explain the benefits of using double glazing for a consumer.

.....

.....

.....

.....

.....

..... [3]

**Total [15]**

18 Fig. 3 shows two stacking toys.

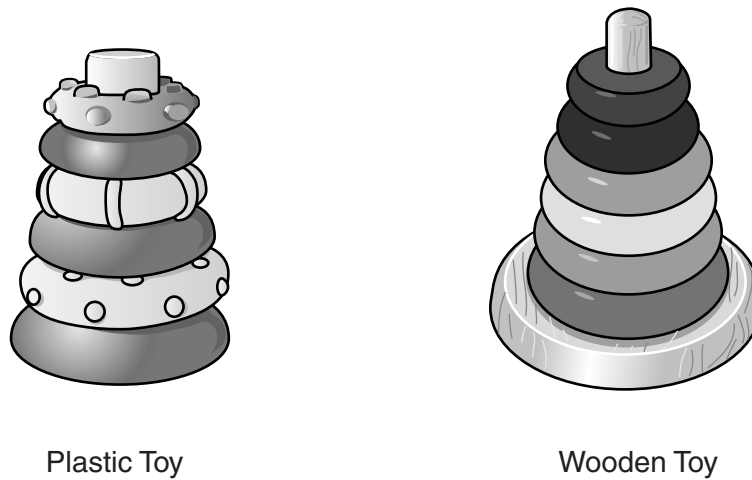


Fig. 3

(a) State which toy is made from a non-renewable material.

..... [1]

(b) The wooden toy is manufactured using a sustainable energy source.

Describe **two** ways that electricity can be generated in a sustainable way.

1 .....

.....

.....

2 .....

.....

..... [4]

(c) Give **two** reasons why manufacturers should reduce the packaging on products such as the toys in Fig. 3.

1 .....

.....

.....

2 .....

.....

..... [4]

- (d) (i) State how a consumer would know the toys are safe to purchase.

.....

.....

.....

..... [2]

- (ii) Describe **two** ways in which health and safety has been considered in the design of the plastic toy.

1 .....

.....

.....

.....

2 .....

.....

.....

..... [4]

**Total [15]**

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