

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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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** CO₂ 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 The identification of hazards in the working environment is known as:

..... [1]

10 Chlorofluorocarbons are commonly known by the abbreviation:

..... [1]

4

Decide whether each of the following statements is **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]
			Total [15]

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.

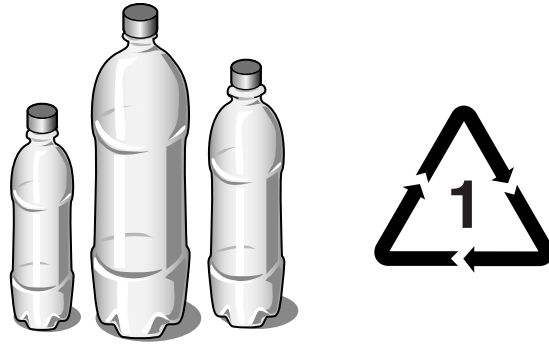


Fig. 1

(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:

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

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

..... [6]

Total [15]

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

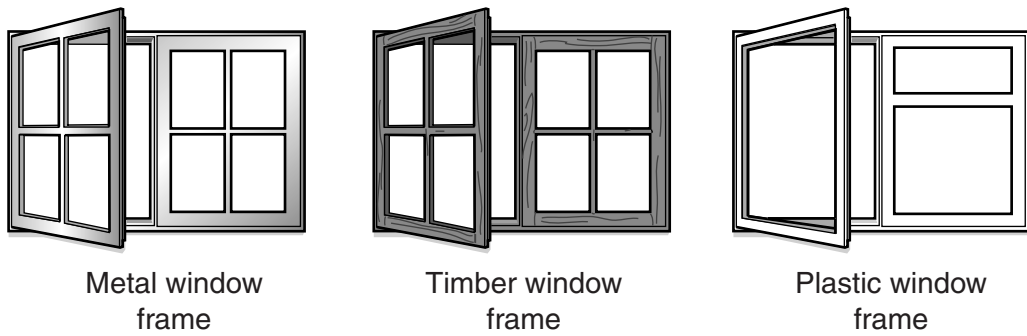


Fig. 2

(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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.....
.....
.....
.....
..... [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.

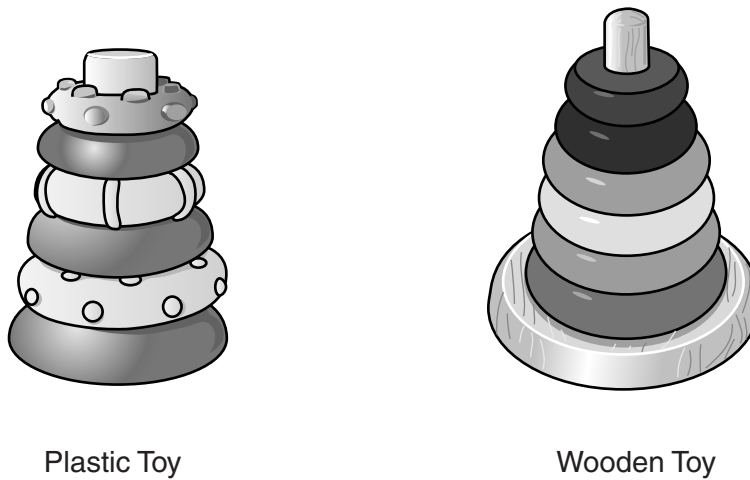


Fig. 3

(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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