



GENERAL CERTIFICATE OF SECONDARY EDUCATION
DESIGN AND TECHNOLOGY
 Industrial Technology
 Sustainable Design

A542

Candidates answer on the Question Paper

OCR Supplied Materials:
None

Other Materials Required:
None

Monday 18 January 2010
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 clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided, however additional paper may be used if necessary.

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 (ring) your answer.

1 The symbol shown stands for:



- (a) Correct engineering
- (b) Classic excellence
- (c) Conformity to European standards
- (d) Clean environment

[1]

2 Which of these materials is the most difficult to recycle?

- (a) Paper
- (b) Mild Steel
- (c) Thermosetting plastic
- (d) Glass

[1]

3 Standard components are used in a manufactured product to:

- (a) Make sure that it conforms to British Standards
- (b) Make it easier to understand
- (c) Improve aesthetics
- (d) Reduce costs

[1]

4 Waste materials that are **not** able to decompose easily in the environment are called:

- (a) Non-biodegradable materials
- (b) Disposable materials
- (c) Biodegradable materials
- (d) Harmful materials

[1]

5 Companies may pay to be allowed to exceed their carbon dioxide emission limit.

This is known as:

- (a) Carbon dioxide override
- (b) Cash overpayment
- (c) Cash capping
- (d) Carbon off-setting

[1]

6 What is the term used when a product is adapted to suit an alternative use?

..... [1]

7 What is the term applied to the identification of potential dangers in a work area?

..... [1]

8 Give **one** example of a renewable energy source.

..... [1]

9 Give **one** example of a non-renewable energy source.

..... [1]

10 Some companies produce goods in many countries.

Name the term that describes this company structure.

..... [1]

Decide whether each of the following statements is true or false.

Tick (✓) the box to show your answer.

	True	False	
11 Bio-plastics are a renewable resource.	<input type="checkbox"/>	<input type="checkbox"/>	[1]
12 Thermoplastics cannot be recycled.	<input type="checkbox"/>	<input type="checkbox"/>	[1]
13 A renewable energy source can only be renewed after 15 years.	<input type="checkbox"/>	<input type="checkbox"/>	[1]
14 Lead based paints should be used on toys for young children.	<input type="checkbox"/>	<input type="checkbox"/>	[1]
15 Transportation of materials and goods adds to the carbon footprint of a product.	<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 (a) Symbols are displayed on packaging for products to identify the material used and to aid decisions about recycling.

(i) Name the material indicated by the symbol in Fig. 1.



Fig. 1

The material is [2]

(ii) What does the symbol in Fig. 2 indicate about the packaging material?

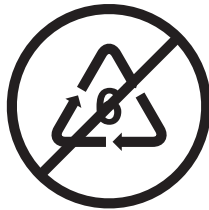


Fig. 2

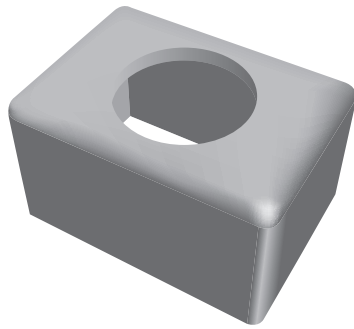
The packaging material is [1]

(b) Give **two** environmental factors and explain how they should be considered when designing packaging for products.

1.
.....
.....
.....
.....
.....
..... [3]

2.
.....
.....
.....
.....
..... [3]

17 The child's building brick shown in Fig. 3 is formed by injection moulding and uses the batch production method of manufacture.



Child's Building Brick

Material – LDPE
Dimensions – 50 mm x 25 mm x 20 mm

Fig. 3

(a) With reference to both the manufacturing method and the production method, explain how the building brick is a good example of eco-design.

(i) Manufacturing method
.....
.....
.....
..... [3]

(ii) Production method
.....
.....
.....
..... [3]

(b) Give **three** dangers faced by the operator when using tools and materials associated with injection moulding.

(i)
..... [1]

(ii)
..... [1]

(iii)
..... [1]

(c) Explain **two** ways in which toys could be made safe for young children.

(i)
.....
.....
.....
.....
.....
..... [3]

(ii)
.....
.....
.....
.....
..... [3]

18 (a) Give **three** safe working practices that should be followed in a workshop.

- 1. [1]
- 2. [1]
- 3. [1]

(b) State **two** energy sources used in producing electricity and, for each, describe their environmental effects.

- 1. Energy source: [1]
Environmental effects: [2]
- 2. Energy source: [1]
Environmental effects: [2]

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