



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 11 January 2010
Afternoon

Duration: 1 hour



| | | | |
|--------------------|--|-------------------|--|
| Candidate Forename | | Candidate Surname | |
|--------------------|--|-------------------|--|

| | | | | | | | | | | |
|---------------|--|--|--|--|--|------------------|--|--|--|--|
| Centre Number | | | | | | Candidate Number | | | | |
|---------------|--|--|--|--|--|------------------|--|--|--|--|

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 in Section A **and** Section B.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided.

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 Which of the following is a **non**-renewable resource?
- (a) Gas
 - (b) Wool
 - (c) Wood
 - (d) Paper [1]
- 2 Which of the following is **not** primary recycling?
- (a) Giving an item to a charity shop
 - (b) Re-making the product into something else
 - (c) Handing items you no longer use to friends
 - (d) Leaving a product to biodegrade [1]
- 3 Assessing the potential dangers in a factory is officially called:
- (a) Danger assessment
 - (b) Health and safety assessment
 - (c) Machinery assessment
 - (d) Risk assessment [1]
- 4 The symbol shown stands for:
- (a) Managed Forest
 - (b) Biodegradable
 - (c) Timber Yard
 - (d) Picnic area [1]



5 Which of the following is **not** a renewable energy resource?

- (a) Water
- (b) Wind
- (c) Oil
- (d) Solar power

[1]

6 State the meaning of 'Biodegradable'.

..... [1]

7 What is it called when a product is reused or its materials are made into another product?

..... [1]

8 What is meant by the term 'Product Analysis'?

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

9 Fig. 1 shows a symbol found on many products.



Fig. 1

The meaning of the symbol shown in Fig. 1 is:

..... [1]

10 Name **one** fossil fuel, other than coal.

..... [1]

Decide whether each of the following is **True** or **False**.
Tick (✓) the box to show your answer.

| | True | False | |
|---|--------------------------|--------------------------|------------|
| 11 Some plastics are made from oil. | <input type="checkbox"/> | <input type="checkbox"/> | [1] |
| 12 Ethnic trading is a term used to show that the basic rights of employees are protected. | <input type="checkbox"/> | <input type="checkbox"/> | [1] |
| 13 Aluminium drinks cans are difficult to recycle. | <input type="checkbox"/> | <input type="checkbox"/> | [1] |
| 14 All plastics are biodegradable. | <input type="checkbox"/> | <input type="checkbox"/> | [1] |
| 15 Pine is a sustainable resource. | <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. 2 shows the headings used in a life cycle analysis of a product. Two headings have been left blank.

| |
|---------------------------|
| Obtaining raw materials |
| Processing raw materials |
| Manufacturing the product |
| |
| Using the product |
| |

Fig. 2

- (a)** State the **two** missing headings.

1 [1]
2 [1]

- (b)** Life cycle analysis is useful when working out the 'carbon footprint' of a product.

Explain the meaning of the term 'carbon footprint'.

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

(c) Give **three** environmental effects of global warming.

Effect 1
..... [1]

Effect 2
..... [1]

Effect 3
..... [1]

(d) The 6Rs are often used as to help designers think about how they can make products more environmentally friendly. Three of the 6Rs are Refuse, Rethink and Recycle.

(i) Name the remaining 6Rs not mentioned above.

1 [1]

2 [1]

3 [1]

(ii) For each of the terms **Refuse** and **Rethink** give **two** examples of how products can be designed to be more environmentally friendly.

Refuse

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

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

Rethink

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

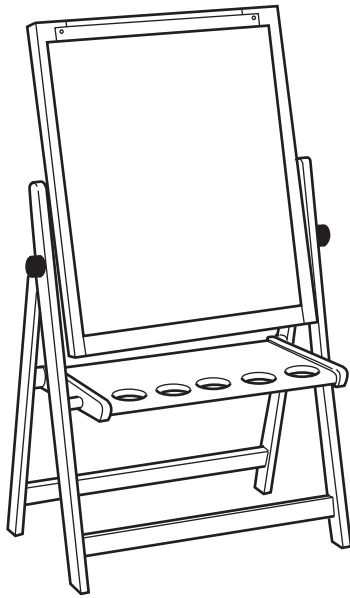
Example 2
.....
..... [1]

[Total: 15]

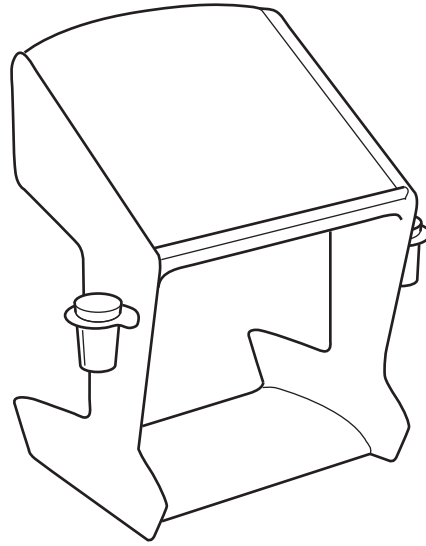
7
BLANK PAGE

PLEASE DO NOT WRITE ON THIS PAGE

17 Two easels are shown in Fig. 3. One is made from wood and the other from plastic.



Wood



Plastic

Fig. 3

(a*) Consider the materials and manufacture of both easels. Discuss the factors that would need to be considered when deciding which is a more environmentally friendly design.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....
.....
.....
.....
.....
.....
..... [6]

(b) Name **two** finishes, considered to be environmentally friendly, that could be applied to the wooden easel.

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

(c) Give **two** environmental advantages of selling the easels from an outlet close to the workshops where they are made.

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

(d) (i) Give the meaning of the term 'built in obsolescence'.

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

(ii) Explain **one** advantage to the **manufacturer** of 'built in obsolescence'.

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

(iii) Explain **one** disadvantage of 'built in obsolescence' to the **user**.

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

[Total: 15]

Turn over

18 Fig. 4 shows a wall clock made from a plastic resin.



Fig. 4

(a) As a product a clock can be both functional and aesthetic.

With reference to the clock explain what is meant by 'functional' and 'aesthetic'.

(i) Functional

.....

.....

.....

.....

.....

..... [4]

(ii) Aesthetic

.....

.....

.....

.....

.....

..... [4]

(b) The clock is to be redesigned, manufactured and sold as Eco-friendly.

State **two** considerations a designer would need to make to ensure the clock was Eco-friendly.

1 [1]

2 [1]

(c) The symbol shown in Fig. 5 is printed on the back of the clock.

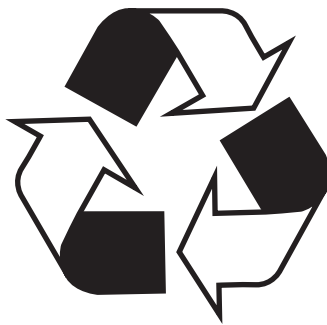


Fig. 5

(i) State the meaning of the symbol shown in Fig. 5. [1]

(ii) Explain why this symbol may be important to potential purchasers of the clock. [2]

(d) Health and Safety is important when the clock is manufactured.

Give **one** example of how Health and Safety Regulations could protect workers during the manufacture of the clock.

..... [2]

[Total: 15]

PLEASE DO NOT WRITE ON THIS PAGE



Copyright Information

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations, is given to all schools that receive assessment material and is freely available to download from our public website (www.ocr.org.uk) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact the Copyright Team, First Floor, 9 Hills Road, Cambridge CB2 1GE.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.