

Wednesday 30 January 2013 – Afternoon

GCSE DESIGN AND TECHNOLOGY Resistant Materials

A562/01 Sustainable Design

Candidates answer on the Question Paper.

OCR supplied materials:

None

Other materials required:

None

Duration: 1 hour



| | | | |
|--------------------|--|-------------------|--|
| Candidate forename | | Candidate surname | |
|--------------------|--|-------------------|--|

| | | | | | | | | | | |
|---------------|--|--|--|--|--|------------------|--|--|--|--|
| Centre number | | | | | | Candidate number | | | | |
|---------------|--|--|--|--|--|------------------|--|--|--|--|

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.
- Answer **all** the questions in Section A **and** B.
- 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).
- 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 source of energy
- (a) Crude oil
 - (b) Natural gas
 - (c) Hydro-electricity
 - (d) Carbon Dioxide **[1]**
- 2** Which of the following is an example of primary recycling
- (a) Making rubber mats from old car tyres
 - (b) Making donations of items to a charity shop
 - (c) Making plant labels from aluminium cans
 - (d) Making fleece fibres from plastic bottles **[1]**
- 3** To design a product to keep the number of components to a minimum is called
- (a) Remove
 - (b) Reduce
 - (c) Reproduce
 - (d) Restock **[1]**
- 4** The letters FSC stand for
- (a) Forest Stewardship Council
 - (b) Freedom for Secondary Colleges
 - (c) Footprint of Sustainability Choices
 - (d) Fast Safety Checks **[1]**

5 Which of the following should not be disposed of in landfill

- (a) Wooden fence panels
- (b) A hardwood chair
- (c) Card packaging
- (d) Half-full paint tins

[1]

6 State the meaning of the symbol shown



..... [1]

7 Pigments that change colour depending upon temperature are called.

..... [1]

8 Factories with poor working conditions are called.

..... [1]

9 Give the term which describes how products interact with people.

..... [1]

10 Give the term which describes the replanting of trees where forests have been cut down.

..... [1]

4

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

Tick [✓] the box to show your answer.

| | True | False | |
|--|--------------------------|--------------------------|-------------------|
| 11 The Eco-label is valid in Europe | <input type="checkbox"/> | <input type="checkbox"/> | [1] |
| 12 All plastics can be recycled | <input type="checkbox"/> | <input type="checkbox"/> | [1] |
| 13 Methane from landfill sites contributes to global warming | <input type="checkbox"/> | <input type="checkbox"/> | [1] |
| 14 Redesign is a stage in a product's life cycle analysis | <input type="checkbox"/> | <input type="checkbox"/> | [1] |
| 15 Safety considerations are part of a product's eco-design brief | <input type="checkbox"/> | <input type="checkbox"/> | [1] |
| | | | Total [15] |

5
SECTION B

Answer **all** questions.

You are advised to spend 45 minutes on this section.

16 Fig. 1 shows a toy castle that is sold flat packed.

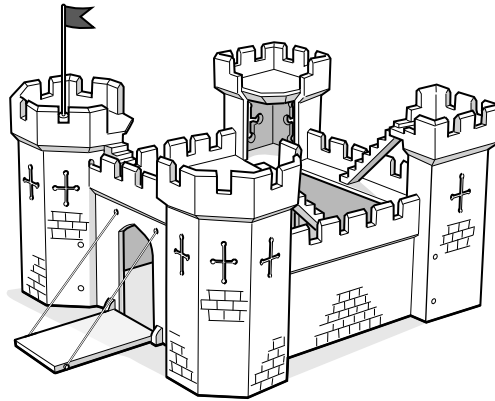


Fig. 1

(a) Explain **three** environmental benefits of flat packed products.

- 1
- 2
- 3

[6]

(b) The toy castle is to be painted with low volatile organic compound (LVOC) paints. Give **three** benefits of using LVOC paints.

1

.....

2

.....

3

.....

[3]

17 Fig. 2 shows a combined desk and chair for a school.



Fig. 2

(a) Identify **two** groups of students who may find this desk and chair difficult to use and explain why.

Group 1

Explanation

.....
.....
.....
.....

Group 2

Explanation

.....
.....
.....
.....

[6]

(b) Using sketches **and** notes, show how the desk and chair could be modified to make it more suitable for all students.



[3]

- (c) Fig. 3 shows the different materials used for the parts of the desk and chair. The parts are joined together using steel screws. The desk and chair is to be recycled. Give **three** stages required to recycle the desk and chair.

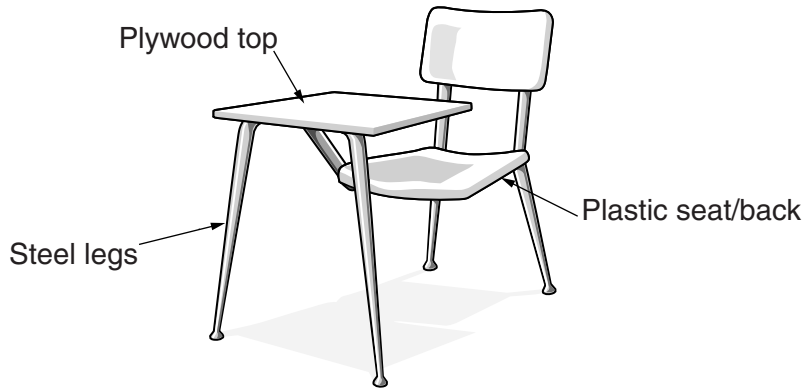


Fig. 3

- 1
- 2
- 3 [3]

- (d) The desk and chair is to be manufactured and assembled overseas and sold in the UK. Explain why this is **not** environmentally friendly.

-
-
-
- [3]

Total [15]

18 Fig. 4 shows a wall mounted CD rack made from clear acrylic sheet.

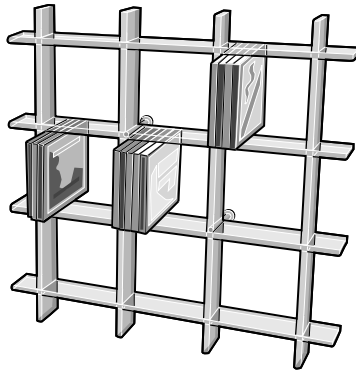


Fig. 4

(a) All 6Rs were used by the designer when planning the CD rack.

Complete the table below to show the **three** missing terms.

| The Six Rs |
|------------|
| Recycle |
| Reduce |
| Rethink |
| |
| |
| |

[3]

(b) With reference to the CD rack, explain what is meant by the following **three** terms:

(i) Non-biodegradable

.....

.....

..... [2]

(ii) Planned obsolescence

.....

.....

..... [2]

(iii) Eco-design
.....
.....
..... [2]

(c) There are six steps in a product’s Life Cycle Analysis. Complete the table below to show the **three** missing steps.

| | |
|---|---------------------------|
| 1 | |
| 2 | Processing raw materials |
| 3 | Manufacturing the product |
| 4 | |
| 5 | |
| 6 | Disposal and recycling |

[3]

(d) Life Cycle Analysis is used when working out the carbon footprint of a product. Explain the term carbon footprint.

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

Total [15]

END OF QUESTION PAPER



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