

Wednesday 27 June 2012 – Morning

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

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.
- 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 Shops advertising UK products are trying to reduce their
- (a) Carbon footprint
 - (b) Product range
 - (c) Costs
 - (d) Delivery times [1]
- 2 One of the following is an example of tertiary recycling.
- (a) Making a plant pot from a plastic yoghurt pot
 - (b) Giving an item to a charity shop
 - (c) Changing plastic bottles into fleece fibres
 - (d) Making playground swings from car tyres [1]
- 3 One of the following is **not** a renewable source of energy.
- (a) Oilseed rape
 - (b) Natural gas
 - (c) Straw
 - (d) Sawdust [1]
- 4 The measurement of our actions on the environment is called
- (a) Eco-footprint
 - (b) Eco-friendly
 - (c) Ecology
 - (d) Economy [1]

5 Shape-memory alloys return to their original shape by the action of

- (a) Light
- (b) Impact
- (c) Water
- (d) Heat

[1]

6 The symbol shown stands for



.....

[1]

7 offsetting involves financially supporting renewable energy projects.

[1]

8 State the term used when the design of a product takes account of its environmental impact.

..... [1]

9 State the name for the tables of data giving measurements of people.

..... [1]

10 Which one of the 6Rs means to mend a product?

..... [1]

4

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

Tick (✓) the box to show your answer.

	True	False	
11 Car tyres are always shredded before re-use	<input type="checkbox"/>	<input type="checkbox"/>	[1]
12 Thermoplastics cannot be recycled	<input type="checkbox"/>	<input type="checkbox"/>	[1]
13 The Ethical Trading Initiative makes sure companies increase their profits	<input type="checkbox"/>	<input type="checkbox"/>	[1]
14 Biodegradable plastics will rot away	<input type="checkbox"/>	<input type="checkbox"/>	[1]
15 Risk assessments in schools are voluntary	<input type="checkbox"/>	<input type="checkbox"/>	[1]
			Total [15]

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Section B

Answer **all** questions.

You are advised to spend 45 minutes on this section.

16 Fig. 1 shows kettles from two different times.

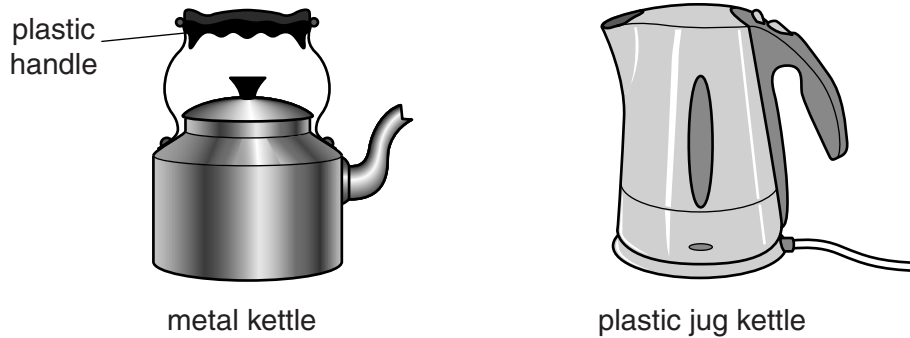


Fig. 1

(a) Describe **two** design features that mean the plastic jug kettle is energy efficient.

1.
-
-
2.
-
-

[4]

(b) Explain what is meant by the following **two** terms. Refer to the kettles shown in Fig. 1.

- (i)** Aesthetics
-
-
-
-
-

[3]

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

(c) Describe how you could recycle the kettles at the end of their useful lives.

.....
.....
.....
.....
.....
..... [4]

(d) Give **one** reason why the metal kettle has a plastic handle.

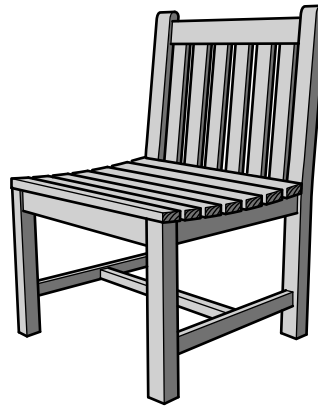
.....
.....
..... [1]

Total [15]

17 Fig. 2 shows two garden chairs.



plastic chair



softwood chair

Fig. 2

(a)* Discuss how you could manufacture garden chairs from recycled or waste materials.

[6]

- (b) Show how you could modify the softwood chair to make it more ergonomically user-friendly. Use sketches and notes.



[3]

- (c) State **two** environmental benefits of using preservative coatings containing low volatile organic compounds (VOCs) on the softwood chair shown in Fig. 2.

1

.....

2

.....

[2]

- (d) Give **two** benefits of the plastic chair to the user.

1

.....

2

.....

[2]

- (e) The softwood chair shown in Fig. 2 is to be handmade in a less economically developed country (LEDC).

Give **two** social benefits of this decision.

1

.....

2

..... [2]

Total [15]

18 Fig. 3 shows a wooden rocking horse.

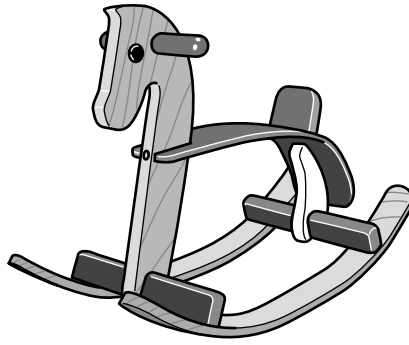
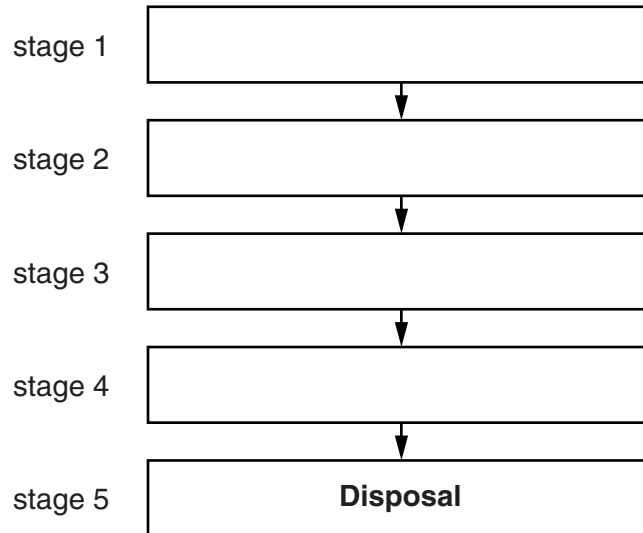


Fig. 3

(a) Complete the table to show the stages of the Life Cycle Analysis (LCA) for the rocking horse.

The final stage, Disposal, is given.



[4]

(b) Describe **two** ways that the designer of the rocking horse has thought about the safety of the user.

1

.....

.....

2

.....

.....

[4]

- (c) The rocking horse must meet British safety standards.

Give **four** safety checks which could be carried out during manufacture.

1

.....

2

.....

3

.....

4

.....

[4]

- (d) The rocking horse has been designed to have a limited product lifetime.

Explain what is meant by the term 'limited product lifetime'.

.....

.....

.....

.....

[3]

Total [15]

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