

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GCSE

A542/01

DESIGN AND TECHNOLOGY

Industrial Technology

Sustainable Design

WEDNESDAY 15 MAY 2013: Morning

DURATION: 1 hour
plus your additional time allowance

MODIFIED ENLARGED

Candidate forename		Candidate surname	
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Centre number						Candidate number				
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Candidates answer on the Question Paper.

OCR SUPPLIED MATERIALS:

None

OTHER MATERIALS REQUIRED:

None

READ INSTRUCTIONS OVERLEAF

INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes on the first page. 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 SECTION 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).

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.
- The quality of your written communication will be taken into account in marking your answer to the questions marked with an asterisk (*).
- Any blank pages are indicated.

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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 energy source?

(a) Coal

(b) Oil

(c) Geothermal

(d) Gas

[1]

2 Disposing of all waste in landfill sites is:

(a) Environmentally friendly

(b) Good for the ozone layer

(c) Not sustainable

(d) Economically viable

[1]

- 3 The design of a product can be improved by:**
- (a) Polishing it**
 - (b) Rethinking**
 - (c) Painting**
 - (d) Repairing** [1]
- 4 Which of the following products cannot be recycled?**
- (a) Thermoset plastic electric sockets**
 - (b) Cardboard boxes**
 - (c) Thermoplastic drinks bottles**
 - (d) Brass door handles** [1]
- 5 Smart materials:**
- (a) Are used to make cars larger**
 - (b) Are all low cost**
 - (c) Cannot be made of plastic**
 - (d) Respond to environmental changes** [1]

- 6 Which 6R describes when we decide not to buy a product?**
_____ [1]
- 7 Name ONE of the three main types of recycling.**
_____ [1]
- 8 Name the term used to describe companies that produce goods in many countries.**
_____ [1]
- 9 State the name given to the final stage of the design process.**
_____ [1]
- 10 Name the term that describes the stages a product goes through from conception to disposal.**
_____ [1]

Decide whether each of the following statements is **TRUE** or **FALSE**.

Tick (✓) the box to show your answer.

	TRUE	FALSE	
11 Carbon offsetting generates low cost electricity	<input type="checkbox"/>	<input type="checkbox"/>	[1]
12 Sustainable wood is not biodegradable	<input type="checkbox"/>	<input type="checkbox"/>	[1]
13 Toxic materials can harm the environment	<input type="checkbox"/>	<input type="checkbox"/>	[1]
14 Ferrous metals cannot be recycled	<input type="checkbox"/>	<input type="checkbox"/>	[1]
15 The eco footprint of a product measures impact on 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 two garden chairs.

FIG. 1

CHAIR A



CHAIR B



(a) Name ONE recyclable plastic suitable for making chair A.

_____ [1]

(b) Explain TWO environmental advantages of chair A.

1 _____

2 _____

[4]

(c) Chair B is left outside all year round. Describe the affect this will have on the:

Cast iron frame

Wooden slats

[4]

- (d) Name a suitable alternative metal for making the frame of chair B and give TWO reasons for your choice.**

Name _____

1 _____

2 _____

[3]

- (e) The slats for chair B are made from wood imported from Brazil.**

Explain how this affects the carbon footprint of the chair.

[3]

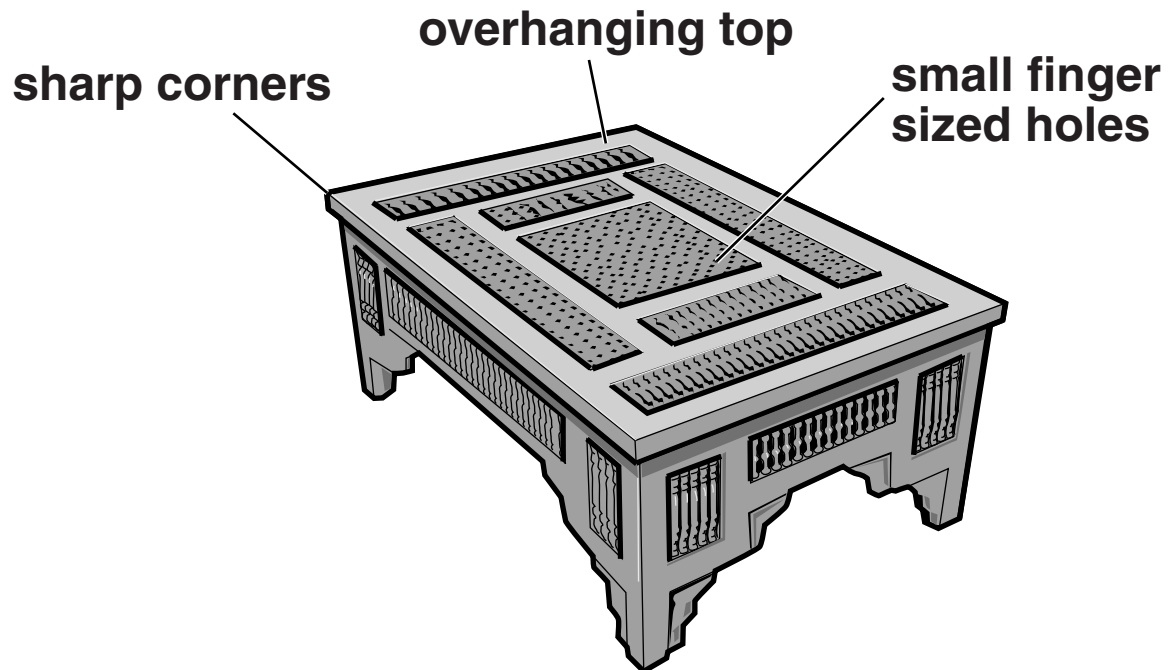
TOTAL [15]

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QUESTION 17 BEGINS ON NEXT PAGE
PLEASE DO NOT WRITE ON THIS PAGE

17 Fig. 2 shows a handmade table from North Africa.

FIG. 2



(a) (i) Give TWO reasons why consumers buy handmade products from different cultures.

1 _____

2 _____

[2]

(ii) Give TWO reasons why consumers may choose not to buy products from different cultures.

1 _____

2 _____

[2]

- (b) The table in Fig. 2 is found to be unsafe for use with children. In the space below use sketches and notes to show TWO modifications to the table that improve its safety. [4]**

(c) The table in Fig. 2 is aesthetically pleasing. List THREE features of a product that can contribute to its aesthetic appeal.

1 _____

2 _____

3 _____

[3]

- (d) Fig. 3 shows the Fairtrade logo that will be attached to the table in Fig. 2.

FIG. 3



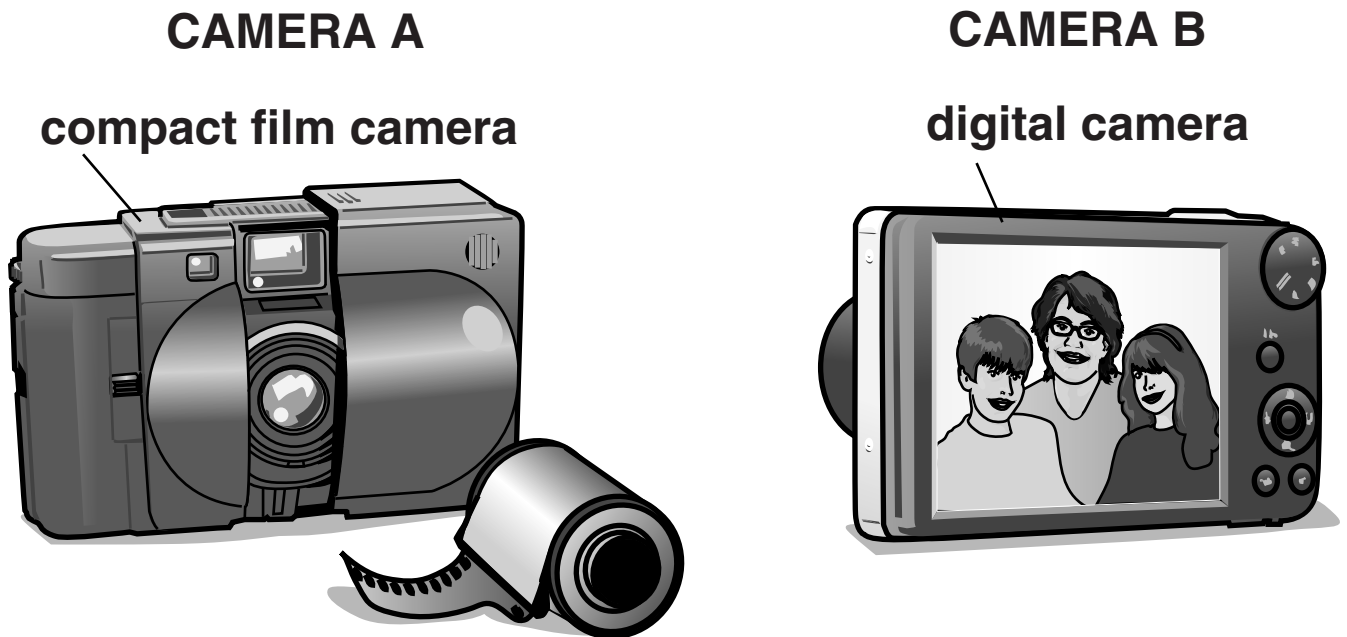
Explain why the Fairtrade logo is important to a consumer.

[4]

TOTAL [15]

18 Fig. 4 shows two cameras.

FIG. 4



(a) State **THREE** ways in which camera B has advanced over camera A.

1 _____

2 _____

3 _____

[3]

(b) The following materials are used when packaging the cameras.

PACKAGING MATERIAL	PURPOSE
Polystyrene block	Protect camera in transit
Polythene bags	Wrapping accessories and instruction booklet
Paper	Instruction booklet
Card	Outer box
Polythene shrink wrap	Sealing the card box

(i) Explain why it is important to reduce the packaging on products such as cameras.

[3]

- (ii) Other than reducing the amount of packaging, describe a more sustainable method of packaging a camera.**

[3]

(c)* Discuss how advances in technology have led to products with reduced environmental impact. [6]

Marks will be awarded for the quality of written communication in your answer.

[illegible]

TOTAL [15]

END OF QUESTION PAPER

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