

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GCSE

A562/01

DESIGN AND TECHNOLOGY

Resistant Materials

Sustainable Design

WEDNESDAY 30 JANUARY 2013: Afternoon

DURATION: 1 hour

plus your additional time allowance

MODIFIED ENLARGED 18pt

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

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

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 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.**
- **Your Quality of Written Communication is assessed in questions marked with an asterisk (*).**

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]

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]

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.

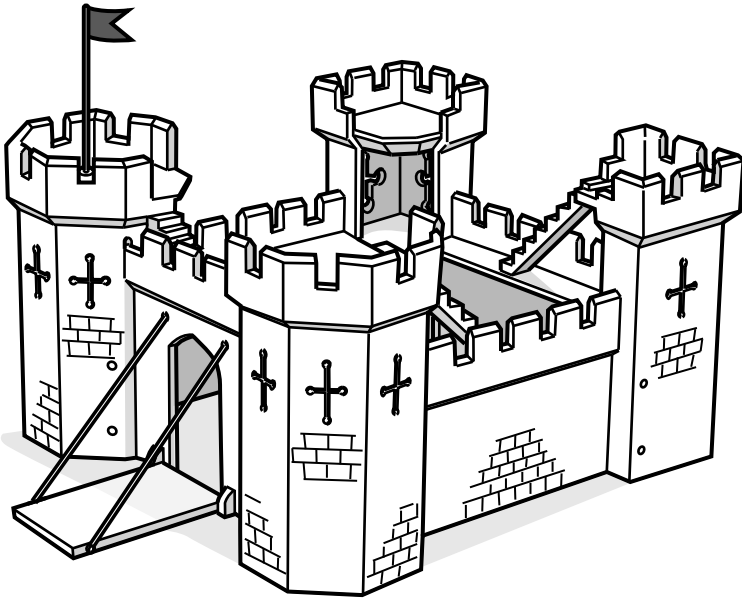


FIG. 1

(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]

(c)* Discuss the disadvantages to the consumer of products which have to be assembled at home.

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

[illegible]

[6]

TOTAL [15]

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.

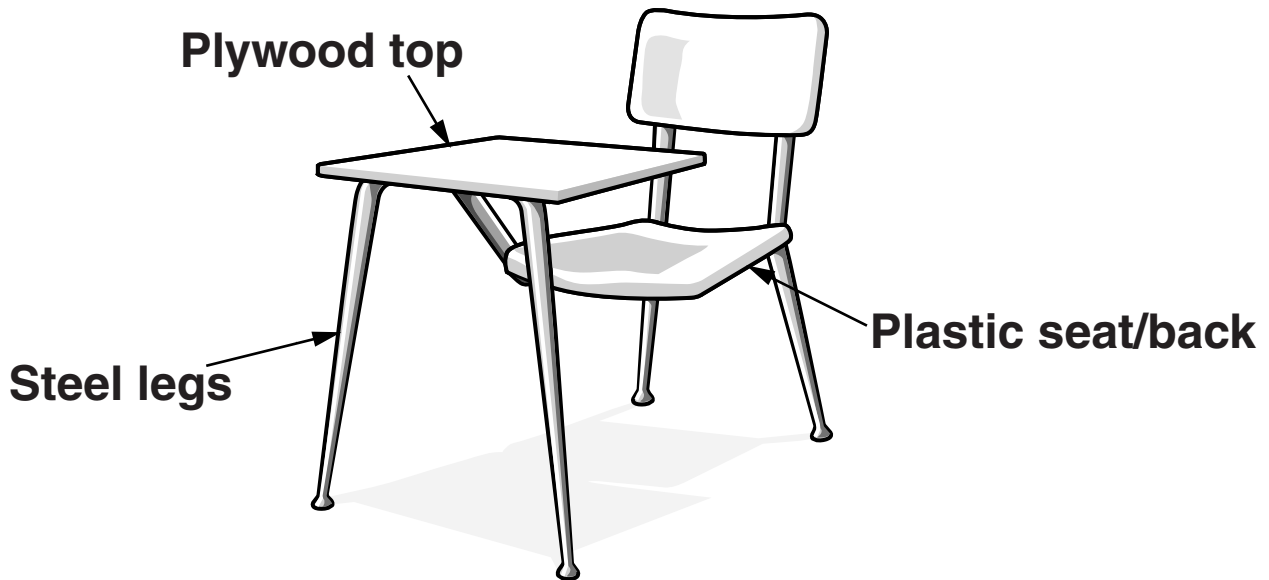


FIG. 3

- 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.

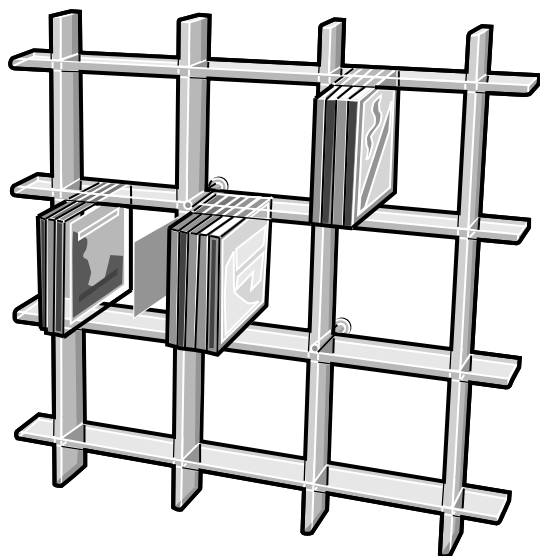


FIG. 4

(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

BLANK 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 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.

