

<b>Candidate forename</b>		<b>Candidate surname</b>	
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<b>Centre number</b>						<b>Candidate number</b>				
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**OXFORD CAMBRIDGE AND RSA EXAMINATIONS  
GENERAL CERTIFICATE OF SECONDARY EDUCATION**

**A562**

**DESIGN AND TECHNOLOGY**

**RESISTANT MATERIALS  
Sustainable Design**

**WEDNESDAY 25 MAY 2011: Afternoon**

**DURATION: 1 hour**

**SUITABLE FOR VISUALLY IMPAIRED CANDIDATES**

**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. Pencil may be used for graphs and diagrams only.**
- **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).**
- **Answer ALL the questions in Section A AND Section B.**

## **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 One of the aims of the British Standards Institute is to make sure:**
- (a) Products are safe and fit for purpose**
  - (b) That products are recyclable**
  - (c) Products are not too expensive**
  - (d) That workers are paid enough** **[1]**
- 2 Carbon footprint is a measure of:**
- (a) Energy used by a company**
  - (b) Waste produced by a household**
  - (c) The impact of human activities on the environment**
  - (d) The size of an adult foot** **[1]**

- 3 Eco-design is the process of designing a product to be:**
- (a) As low cost as possible**
  - (b) Made as fast as possible**
  - (c) As profitable as possible**
  - (d) As environmentally friendly as possible [1]**
- 4 The CE (Conformité Européenne) is a symbol that ensures a product:**
- (a) Meets a safety standard**
  - (b) Conforms to a durability standard**
  - (c) Is made in Europe**
  - (d) Can be connected to an electricity supply [1]**
- 5 Which of the following is NOT a renewable energy resource?**
- (a) Biomass**
  - (b) Wave**
  - (c) Wind**
  - (d) Gas [1]**

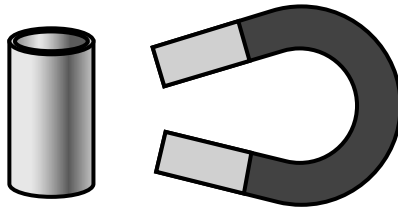
**6 State what is meant by a product being ‘repaired’.**

\_\_\_\_\_ [1]

**7 Give ONE advantage to the manufacturer of planned obsolescence.**

\_\_\_\_\_ [1]

**8 State the meaning of the symbol shown.**



\_\_\_\_\_ [1]

**9 State the meaning of ‘biodegradable’.**

\_\_\_\_\_ [1]

**10 State why CFCs (chlorofluorocarbons) are no longer widely used in products.**

\_\_\_\_\_ [1]

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

**Tick (✓) the box to show your answer.**

	<b>TRUE</b>	<b>FALSE</b>	
<b>11 The second-hand use of a product is known as secondary recycling</b>	<input type="checkbox"/>	<input type="checkbox"/>	<b>[1]</b>
<b>12 Air-born particles are one of the hazards regulated by COSHH</b>	<input type="checkbox"/>	<input type="checkbox"/>	<b>[1]</b>
<b>13 The life cycle of a product is the sequence of stages from conception to decomposition</b>	<input type="checkbox"/>	<input type="checkbox"/>	<b>[1]</b>
<b>14 Chemicals that can cause harm to people and animals are called bio products</b>	<input type="checkbox"/>	<input type="checkbox"/>	<b>[1]</b>
<b>15 Sorting plastic into different types is a major problem in recycling centres</b>	<input type="checkbox"/>	<input type="checkbox"/>	<b>[1]</b>
		<b>Total</b>	<b>[15]</b>

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## SECTION B

Answer ALL questions.

You are advised to spend 45 minutes on this section.

16 Fig. 1 shows a light shade made from polypropylene sheet.

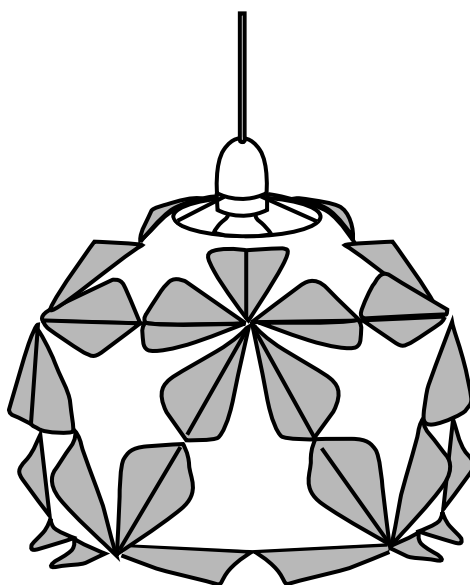


Fig. 1

(a) Manufacturers must ensure that products are safe for the user.

State TWO possible safety concerns that the manufacturer of the light shade would need to consider.

1 \_\_\_\_\_

2 \_\_\_\_\_

[2]



**(b) The lamp shade is supplied in flat pack form for assembly by the user.**

**Give TWO reasons why supplying the lamp shade in flat pack form may benefit the environment.**

**1** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**2** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**[4]**

**(c) The lamp shade could be recycled at the end of its useful life.**

**Explain how the manufacturer could encourage consumers to recycle the product.**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**[3]**



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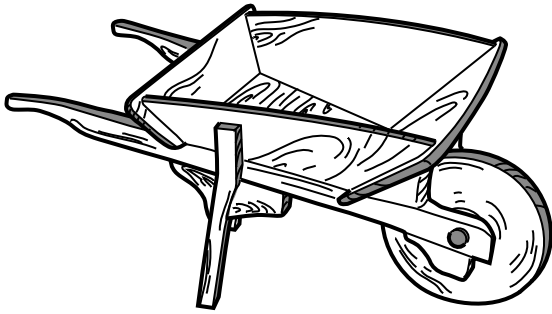
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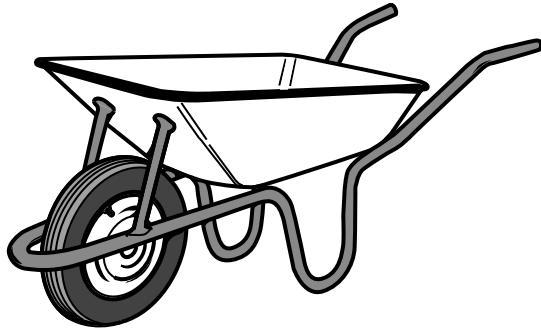
[6]

**Total [15]**

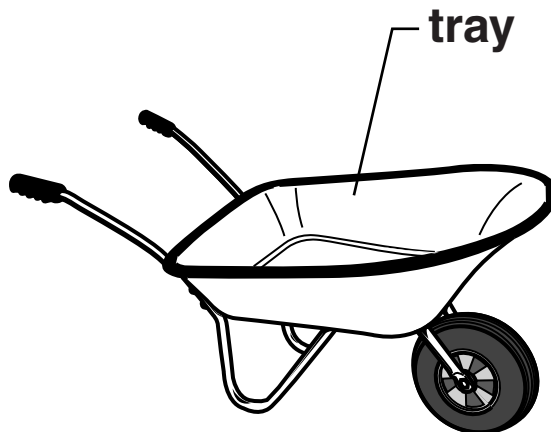
17 Fig. 2 shows three wheelbarrows.



**Wheelbarrow A  
made from wood**



**Wheelbarrow B made  
from metal and rubber**



**Wheelbarrow C made  
from metal and plastic**

**Oldest**



**Newest**

**Fig. 2**

**(a) Give TWO reasons why wheelbarrow B evolved from wheelbarrow A.**

**Reason 1** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Reason 2** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**[4]**

**(b) Give TWO reasons why wheelbarrow C evolved from wheelbarrow B.**

**Reason 1** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Reason 2** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**[4]**

**(c) Describe TWO ways in which wheelbarrow C has better ergonomic qualities than wheelbarrow A.**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**[2]**

**(d) Give ONE reason, other than cost, why a designer may refuse to use a tropical hardwood for a wheelbarrow.**

\_\_\_\_\_ [2]  
\_\_\_\_\_

**(e) Give ONE reason why a designer may choose injection moulding rather than vacuum forming for the tray of wheelbarrow C.**

\_\_\_\_\_ [1]  
\_\_\_\_\_

**(f) (i) State ONE piece of anthropometric data that would have been used in the design of the wheelbarrow.**

**Anthropometric data** \_\_\_\_\_ [1]

**(ii) Name the part of the wheelbarrow where the data would have been used.**

**Part of wheelbarrow** \_\_\_\_\_ [1]  
\_\_\_\_\_

**Total [15]**

18 Fig. 3 shows a pendant made from a tropical hardwood.



Fig. 3

(a) Explain, with reference to the tropical hardwood pendant, what is meant by cultural influences on a product.

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[3]



**(b) The pendant is aesthetically pleasing.**

**List THREE properties of a product which can contribute to its aesthetic appeal.**

**1** \_\_\_\_\_

**2** \_\_\_\_\_

**3** \_\_\_\_\_

**[3]**

**The Ethical Trading Initiative (ETI) requires that the working conditions of employees must meet minimum standards.**

**(c) State FOUR examples of working conditions which supporters of this initiative must meet.**

**1** \_\_\_\_\_

**2** \_\_\_\_\_

**3** \_\_\_\_\_

**4** \_\_\_\_\_

**[4]**

**(d) Risk assessment is important when planning the manufacture of a product.**

**State the TWO key components of risk assessment.**

**1** \_\_\_\_\_

**2** \_\_\_\_\_

**[2]**

**(e) Some products are marked with the symbol shown in Fig. 4.**



**Fig. 4**

**(i) Name the symbol shown in Fig. 4.**

\_\_\_\_\_ **[1]**

**(ii) Explain why consumers may wish to purchase products displaying this symbol.**

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**[2]**

**Total [15]**

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