

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

**A532**

**DESIGN AND TECHNOLOGY**

**Graphics  
Sustainable Design**

**FRIDAY 21 JANUARY 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 sections A AND 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 (\*).**

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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 Using recycled materials:**

- (a) Causes environmental damage**
- (b) Creates mass unemployment**
- (c) Makes life easier**
- (d) Reduces the consumption of natural resources**

**[1]**

**2 A product is sustainable if:**

- (a) The manufacturing process is completed quickly**
- (b) The materials used are of a good quality**
- (c) The materials and manufacturing processes used have little impact on the environment**
- (d) The materials and manufacturing processes used are inexpensive**

**[1]**

- 3 Which of the following cannot be recycled after use:**
- (a) Newspapers**
  - (b) Plastic bottles**
  - (c) Compact Discs**
  - (d) Drinks cans**
- [1]**
- 4 To repair a product means:**
- (a) To throw it away**
  - (b) To take it apart and use for a different purpose**
  - (c) To choose not to use the product**
  - (d) To fix or mend it so it can be used again**
- [1]**
- 5 The main purpose of packaging is to:**
- (a) Protect and prolong the shelf life of a product**
  - (b) Be cheap to produce**
  - (c) Use as many different materials as possible**
  - (d) Be always made from plastic**
- [1]**

**6 Name ONE of the places where non-recyclable domestic waste is taken for disposal.**

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

**7 In the context of a product, what does the term redundant mean?**

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

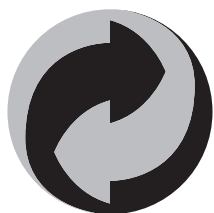
**8 Which of the 6Rs describes when we decide NOT to buy or use a product?**

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

**9 Name the term given to the biodegrading of organic waste left to rot in the garden.**

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

**10 State the meaning of the symbol below.**



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

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

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

- |  | <b>TRUE</b>              | <b>FALSE</b>             |            |
|--|--------------------------|--------------------------|------------|
| <b>11 Glass can decompose</b>  | <input type="checkbox"/> | <input type="checkbox"/> | <b>[1]</b> |
| <b>12 Special symbols are put on packaging to let us know if it can be recycled</b>          | <input type="checkbox"/> | <input type="checkbox"/> | <b>[1]</b> |
| <b>13 Repairing a product is bad for the environment</b>                                     | <input type="checkbox"/> | <input type="checkbox"/> | <b>[1]</b> |
| <b>14 A cardboard box can be recycled</b>  | <input type="checkbox"/> | <input type="checkbox"/> | <b>[1]</b> |
| <b>15 A carbon footprint can be measured by making a greenhouse gas emissions assessment</b> | <input type="checkbox"/> | <input type="checkbox"/> | <b>[1]</b> |

**Total [15]**

## SECTION B

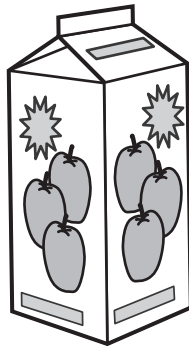
Answer ALL questions.

You are advised to spend 45 minutes on this section.

16 Fig. 1 shows three types of drinks containers.



Glass bottle



Cardboard carton



Aluminium Can

Fig. 1

(a) Give TWO reasons why glass containers are considered to be environmentally friendly.

1 \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2 \_\_\_\_\_

\_\_\_\_\_

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



**(b) The cardboard carton used for drinks is made from a laminate of cardboard and polyethylene.**

**Give FOUR reasons why these materials are suitable.**

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

\_\_\_\_\_

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

\_\_\_\_\_

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

\_\_\_\_\_

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

\_\_\_\_\_ **[4]**

**(c) Explain why aluminium cans are suitable for recycling.**

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**[4]**

**(d) Give TWO ways in which a consumer can make packaging easier to recycle.**

**1** 

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**2** 

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**[2]**

**(e) Explain what is meant by Primary recycling.**

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**[3]**

**Total [15]**

17 Fig. 2 shows a solar powered road sign. The road sign must light up at night.

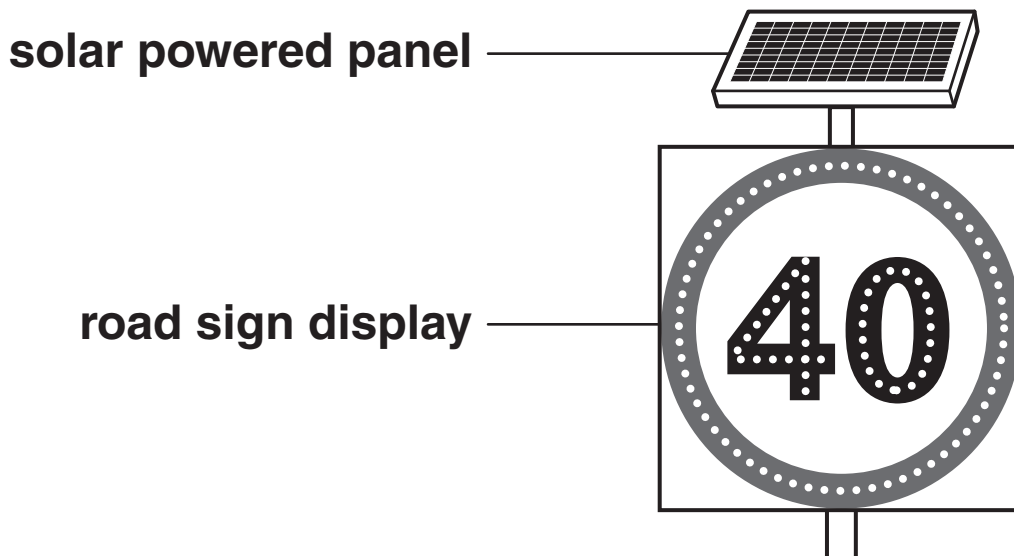


Fig. 2

(a) Explain what is meant by the term solar power.

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[2]

(b) Solar power is a sustainable energy source. Name ONE other sustainable energy source.

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[1]

(c) Give ONE reason why a road sign would be suitable for using solar power.

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[2]

**(d) Describe how the road sign would be able to light up at night.**

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[2]

**(e) Explain why, after testing and trialling, the road sign was found to be unsuitable for some parts of the country.**

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[2]

(f) Complete the table below.

<b>6Rs</b>	<b>DESCRIPTION</b>
<b>RECYCLE</b>	<b>Products that can be recycled or use recycled materials</b>
	<b>Products that can be adapted for an alternative use</b>
	<b>To approach design problems differently</b>
<b>REDUCE</b>	

[3]

**(g) A symbol to represent solar power is needed.  
Using a sketch and notes design ONE idea for a  
suitable symbol.**

**[3]**

**Total [15]**

18 Fig. 3 shows some DVD's, together with the box used to hold the DVD's during transport to the retailer.

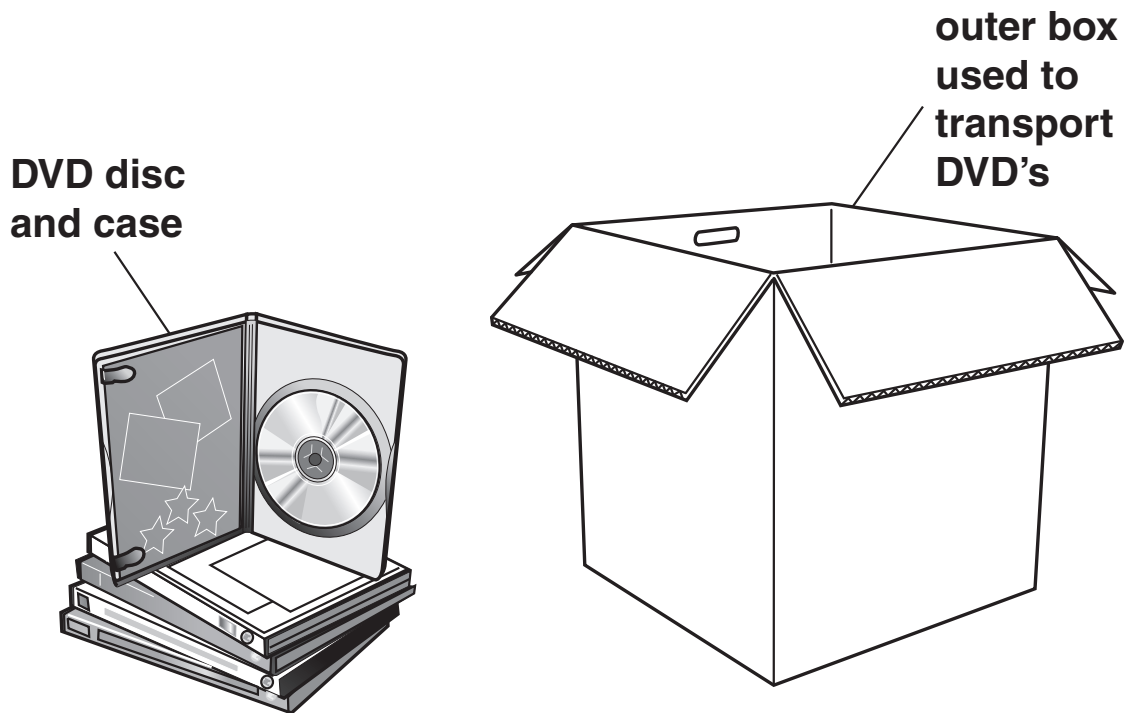


Fig. 3

(a) Give ONE reason why the manufacturer would package the DVD's in an outer box.

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

(b) Name the specific type of cardboard that would be used for the outer box.

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

(c) Give ONE advantage to the manufacturer of using a recycled material for the outer box.

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

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



(d) Fig. 4 below shows a symbol printed on the outer box.

Explain what this symbol tells you about the ORIGINAL material used to make the box.



Fig. 4

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[2]

**(e\*) The outer box used to transport the DVDs can also be used to display the DVDs in a retail store.**

**Discuss the benefits of this type of packaging system.**

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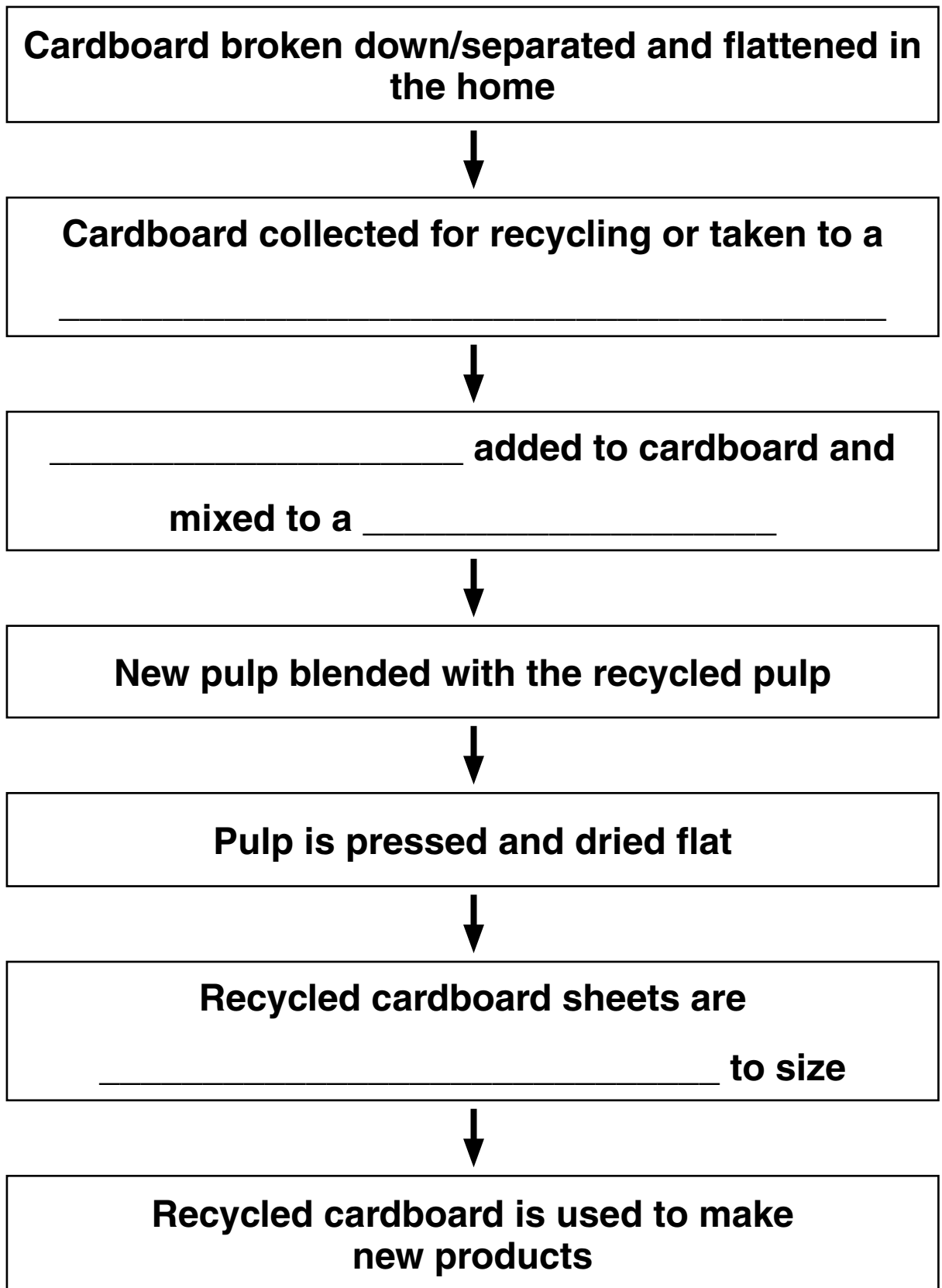
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[6]

(f) Complete the sentences below to show the process of RECYCLING CARDBOARD.



[4]

Total [15]

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