

<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 26 MAY 2010: 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 clearly in capital letters, your Centre Number and Candidate Number in the boxes on the first page.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer **ALL** the questions in Section A **AND** Section B.
- 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 (\*).

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## **SECTION A**

**Answer ALL questions.**

**You are advised to spend 15 minutes on this section.**

**On questions 1– 5 ring your answer.**

- 1 Which of the following is NOT a renewable resource?**
- (a) Wood**
  - (b) Wool**
  - (c) Metal**
  - (d) Paper** **[1]**
- 2 Taking a product apart to analyse the parts, is called:**
- (a) Product disassembly**
  - (b) Product assembly**
  - (c) Repair analysis**
  - (d) Commercial analysis** **[1]**

- 3 Adding design features to deliberately make a product outdated after a certain length of time is called:**
- (a) Planned obsolescence**
  - (b) Safety obsolescence**
  - (c) Expired warranty**
  - (d) Technological obsolescence** [1]

**4 The symbol shown indicates:**

- (a) Environmentally friendly**
- (b) Environmentally recyclable**
- (c) European eco label**
- (d) European standards label** [1]



**5 The role of a designer of sustainable products is to:**

- (a) Modify existing designs**
- (b) Use traditional designs**
- (c) Design products that can be bought cheaply**
- (d) Create innovative environmentally friendly designs** [1]

**6 Give the term used to describe waste materials that rot easily within the environment.**

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

**7 State the meaning of eco design.**

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

**8 In the context of a company's moral issues what does ETI stand for?**

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

**9 Fig. 1 shows a symbol found on products made from one type of material**



**Fig. 1**

**On which material would you find this symbol?**

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

**10 Give ONE reason why numbers from 1 – 7 are used on the symbol shown in Fig. 1.**

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

Decide whether each of the following is TRUE or FALSE.  
Tick (✓) the box to show your answer.

- |  | <u>TRUE</u>              | <u>FALSE</u>             |     |
|--|--------------------------|--------------------------|-----|
| 11 Manufactures do not have to follow government guidelines when disposing of waste materials. | <input type="checkbox"/> | <input type="checkbox"/> | [1] |
| 12 Energy from the sun is an example of a fossil fuel.   | <input type="checkbox"/> | <input type="checkbox"/> | [1] |
| 13 Disposal is the final stage in a life-cycle analysis of a product.                          | <input type="checkbox"/> | <input type="checkbox"/> | [1] |
| 14 Wood is biodegradable.  | <input type="checkbox"/> | <input type="checkbox"/> | [1] |
| 15 Carbon offsetting allows companies to compensate for unavoidable emissions.                 | <input type="checkbox"/> | <input type="checkbox"/> | [1] |

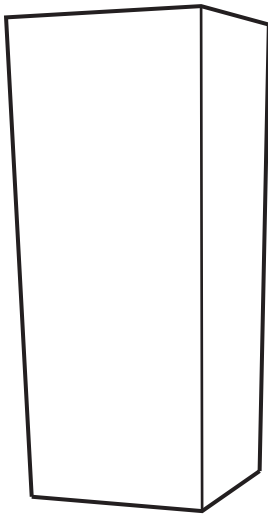
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## SECTION B

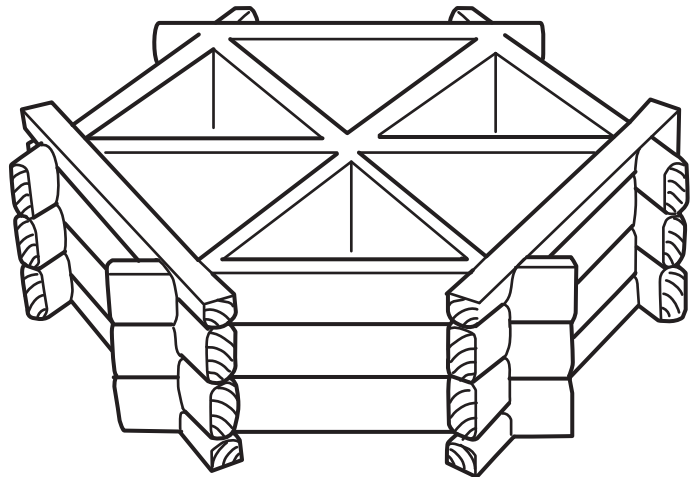
Answer ALL questions.

You are advised to spend 45 minutes on this section.

- 16 Fig. 2 shows two plant containers. One is made from PLASTIC the other from WOOD.



**Plant container  
made from Plastic**



**Plant container  
made from Wood**

**Fig. 2**



**(a) Explain, with reference to the plant containers shown in Fig. 2, what is meant by the following THREE terms.**

**(i) Sustainable**

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**[3]**

**(ii) Recyclable**

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**[3]**

**(iii) Biodegradable**

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[3]

**(b) Give ONE environmental advantage of using water based sealer rather than synthetic paint to finish the wooden plant container.**

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[1]

**(c) The label on a tin of wood finishes includes the term 'LOW VOLATILE ORGANIC COMPOUNDS'.**

**Explain why a manufacturer would include this information on their products.**

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[3]

**(d) Explain the term 'globalisation of products'.**

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**[2]**

**[Total: 15]**

17 Fig. 3 shows two possible designs for the seat of a child's swing. One is made from wood the other from an old car tyre.

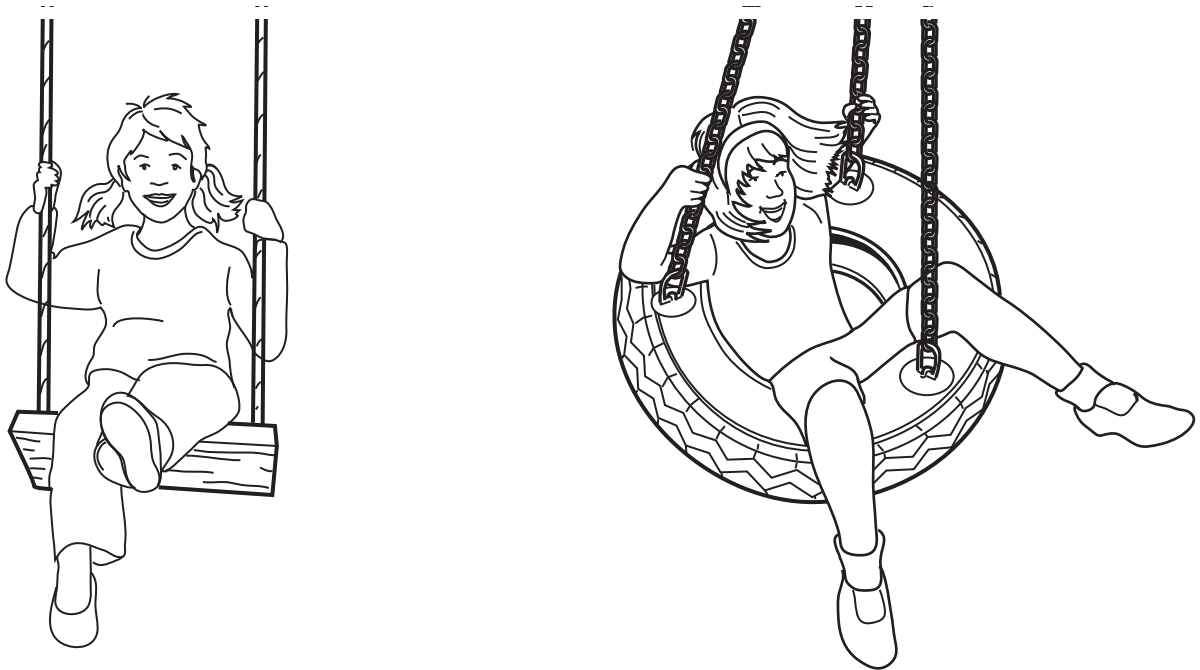


Fig. 3

(a) Give **THREE** advantages of the seat made from an old car tyre.

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

Advantage 2 \_\_\_\_\_  
\_\_\_\_\_ [1]

Advantage 3 \_\_\_\_\_  
\_\_\_\_\_ [1]

**(b) Use sketches and notes to show how the design of the wooden seat could be developed to make it SAFER for the user of the swing.**

**[3]**

**(c) With reference to the seat of a child's swing.**

**Explain what is meant by 'Anthropometrics' and 'Ergonomics'.**

**(i) Anthropometrics**

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**[3]**

**(ii) Ergonomics**

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[3]

**(d) Products can be recycled and disposed of by incineration at the end of their useful life.**

**Give ONE other way of disposing of waste products.**

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[1]

**(e) State TWO harmful effects on the environment of incinerating waste products.**

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

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[1]

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

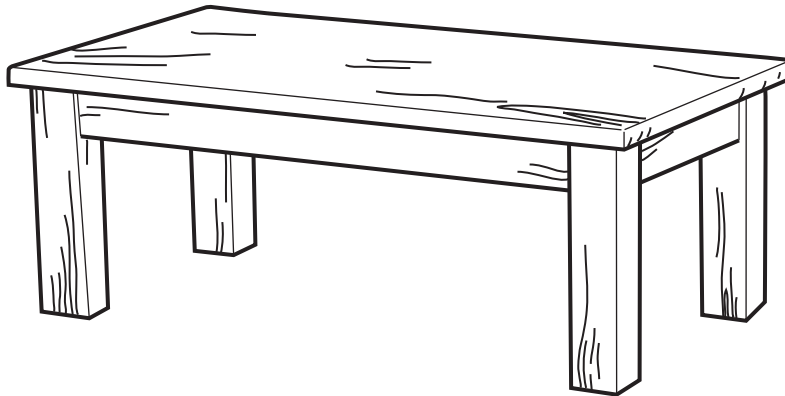
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[1]

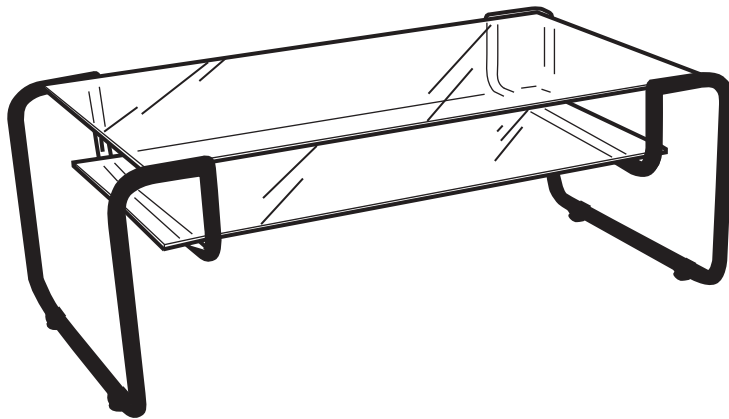
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18 Fig. 4 shows two coffee tables. One is made from solid Mahogany the other from Stainless Steel tube with an Acrylic top and shelf.



**solid mahogany table**



**stainless steel and acrylic table**

**Fig. 4**

**(a\*) Discuss the reasons why both coffee tables may NOT be considered to be environmentally friendly designs.**

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**(b) Name TWO wood based materials that could be used for the top of a coffee table that would be considered to be more environmentally friendly than solid Mahogany and give a reason for your choice.**

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

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

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

**Material 2** \_\_\_\_\_ [1]

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

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

**(c) (i) Explain why companies are relocating the manufacturing of products to countries such as China and India.**

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

**(ii) Explain the benefits, to local people, of companies relocating the manufacture of products to developing countries.**

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**[3]**

**[Total: 15]**



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