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Centre Number						Candidate Number				
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**OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GENERAL CERTIFICATE OF SECONDARY EDUCATION**

A554

**DESIGN AND TECHNOLOGY
PRODUCT DESIGN**

Unit 4: Designing Influences

THURSDAY 14 JANUARY 2010: Afternoon

DURATION: 1 hour 30 minutes

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, however additional paper may be used if necessary.**

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.**
- **SECTION A IS WORTH 30 MARKS. You are advised to spend no more than 45 minutes on it.**
- **SECTION B IS WORTH 30 MARKS. You are advised to spend no more than 45 minutes on it.**
- **You will need to select from the tables in section B when answering question 4 and question 5 of this paper. ‘Trend setter’ and ‘Iconic product’ must be linked to ‘Eras and movements’.**
- **Your Quality of Written Communication is assessed in the question marked with an asterisk (*).**

SECTION A

You are advised to spend 45 minutes on this section.

1 Fig. 1 shows a computer games controller.

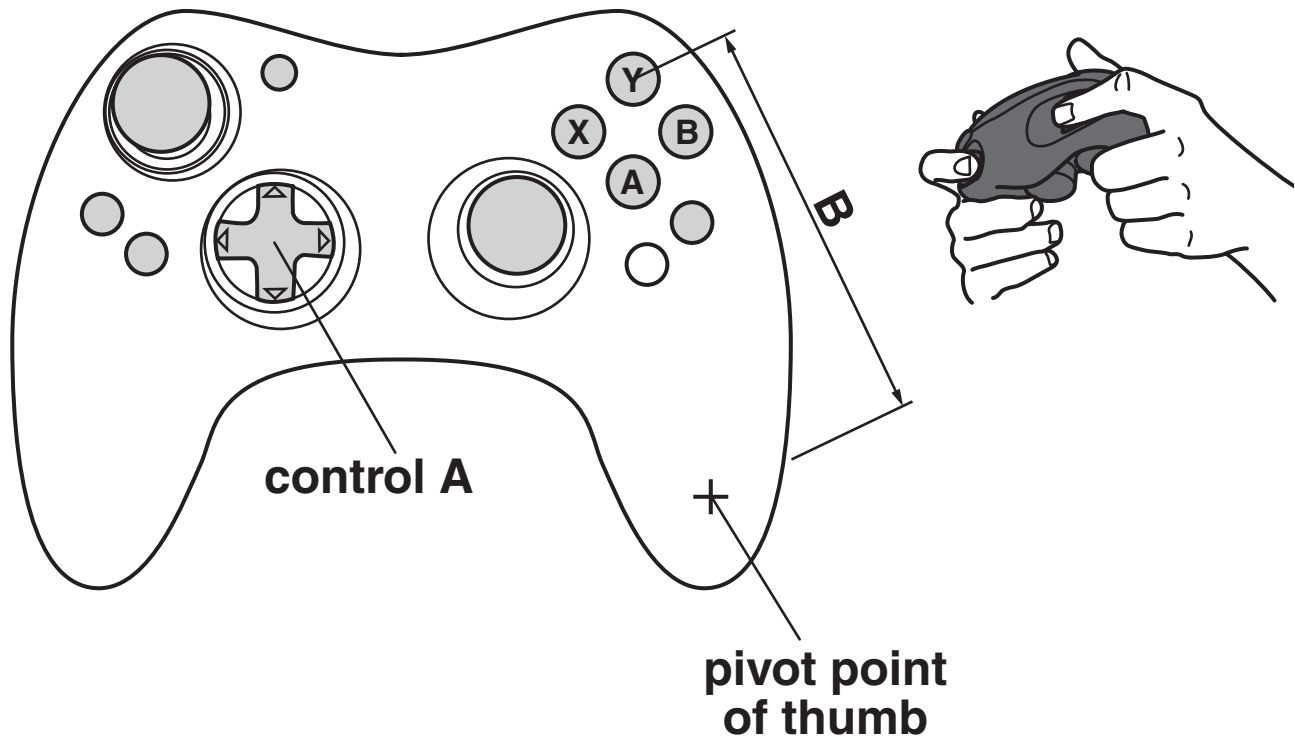


Fig. 1

(a) Give **THREE** design features of a computer games controller.

Feature 1 _____ [1]

Feature 2 _____ [1]

Feature 3 _____ [1]

(b) The table below shows thumb sizes in millimetres. Use this table to answer the questions.

Dimensions	Male (Percentiles)		Female (Percentiles)	
	5%	95%	5%	95%
Thumb length	94	113	87	106
Thumb width	18	22	16	20

(i) State an appropriate diameter for control A in Fig. 1.

_____ [1]

(ii) Justify your answer.

_____ [1]

(iii) Explain why making dimension B 108 mm may be considered a design fault.

_____ [2]

(c) Describe TWO ways in which the designer of the games controller has used aesthetics.

[3]

[Total: 10]

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2 Fig. 2 shows a low energy light bulb.

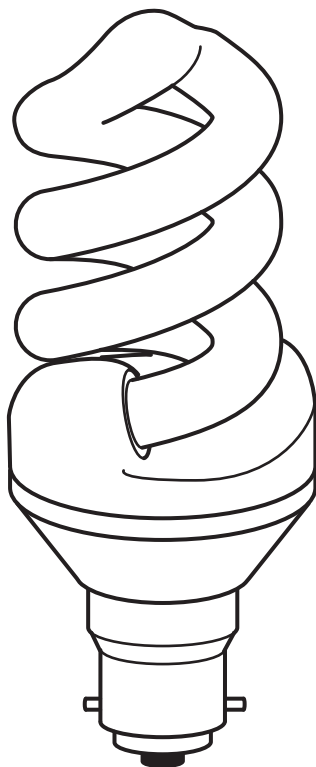


Fig. 2

(a) (i) Give **THREE** reasons why people use low energy light bulbs.

Reason 1 _____ [1]

Reason 2 _____ [1]

Reason 3 _____ [1]

(ii) Explain **ONE** drawback with low energy light bulbs.

_____ [2]

(b) Give TWO examples of renewable energy sources.

Example 1 _____ [1]

Example 2 _____ [1]

(c) Explain how life cycle energy analysis is used in the design of sustainable products.

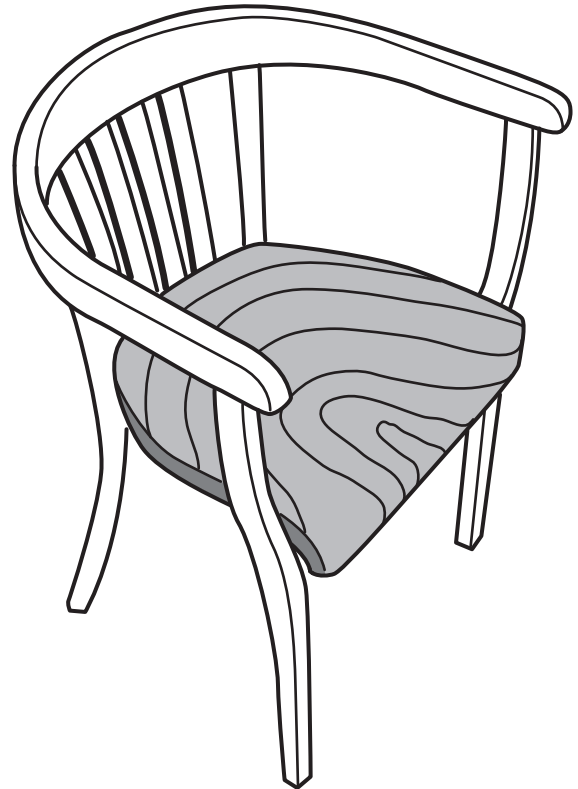
[3]

[Total: 10]

3 Fig. 3 shows a modern office chair and an office chair from the 1940s.



modern office chair

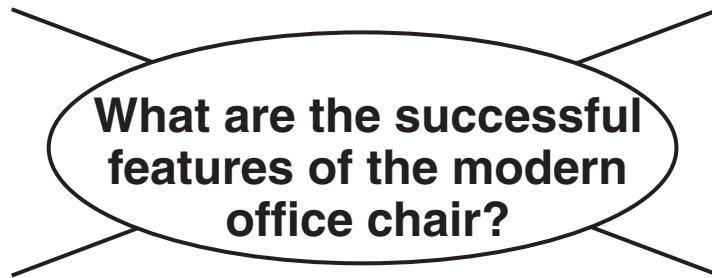


office chair from the 1940s

Fig. 3

- (a) Complete the diagram below by adding a further **THREE** successful features of the modern office chair.

The modern office chair provides good support.



[3]

(b) Explain why TWO of the features you have identified have made the modern office chair successful.

An example has been done for you.

Point 1: The modern office chair provides good support.

Explanation: The use of ergonomics and anthropometric data has led to a chair design that provides good support to the user's back.

Point 2: _____

Explanation:

_____ [2]

Point 3: _____

Explanation:

_____ [2]

(c) Explain why the office chair from the 1940s is considered to be a more sustainable design than the modern office chair.

[3]

[Total: 10]

SECTION B

You are advised to spend 45 minutes on this section.

THIS QUESTION DRAWS UPON THE RESEARCH YOU CARRIED OUT AS PART OF YOUR EXAMINATION PREPARATION.

- 4 The table below shows the eras, trend setters and iconic products for this examination.

Please indicate using a [✓] the era or movement you have studied.

ERA OR MOVEMENT	TREND SETTER	ICONIC PRODUCT	✓
1960s	Alex Issigonis	Mini Cooper	
(1970s) Hippies	Yves St Laurent	Kaftan	
1950s + 1960s	Andy Warhol	Campbell's soup painting	
1980s	Infra-red light emission	TV Remote control	
1960s	Vegetarianism	Nut loaf	

(a*) Trend setter chosen _____

Discuss the importance of this trend setter in the context of modern design.

[6]

(b) Iconic product chosen

Give TWO reasons why the product you have chosen has been so influential. Make specific reference to innovation and function.

Reasons 1 _____

[2]

Reasons 2 _____

[2]

[Total: 10]

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5 THIS QUESTION DRAWS UPON THE RESEARCH YOU CARRIED OUT AS PART OF YOUR EXAMINATION PREPARATION.

You will need to:

- **Write a specification**
- **Produce a range of initial ideas**
- **Develop ONE idea**
- **Give details of the final proposal**

Five different design needs are given below.

Please indicate using a [✓] ONE design need you are going to consider.

DESIGN NEED	✓
A museum requires a mechanical toy in the style of an Alex Issigonis design.	
A coat in the 1970s 'hippy' style.	
A promotional pop up card for an Andy Warhol exhibition.	
A simple electronic product that can be used to control a light remotely.	
A vegetarian product for a young child.	

(a) Identify FOUR important design specification points for your chosen design need. These must specify key design requirements other than those detailed in the design need above.

1 _____
_____ [1]

2 _____
_____ [1]

3 _____
_____ [1]

4 _____
_____ [1]

(b) Use sketches and notes to produce a range of initial ideas that meet your specification.

[5]

(c) Use sketches and notes to develop ONE of your initial ideas to meet the original design need.

[5]

(d) Give details of your final proposal showing how it meets the four design specification points you identified in part (a) of this question.

[6]

[Total: 20]

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