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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**

Designing Influences

MONDAY 6 JUNE 2011: Morning

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, 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 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.
- **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 child's trainer cup.

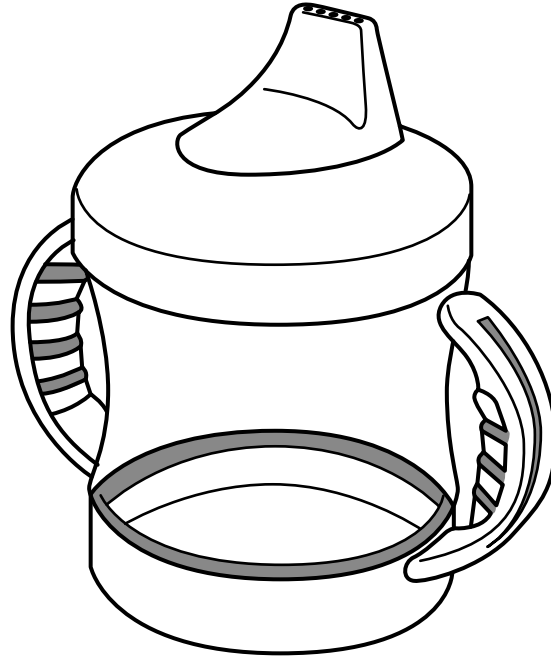


Fig. 1

(a) Give **THREE** design features of the child's trainer cup in Fig. 1.

Feature 1 _____

Feature 2 _____

Feature 3 _____ [3]

(b) The child's trainer cup in Fig. 1 has been manufactured using a thermochromic plastic.

(i) Describe the changes that will occur to the thermochromic plastic if a drink is too hot.

[2]

(ii) Give TWO products, other than a child's trainer cup, that incorporate smart materials.

Product 1 _____

Product 2 _____ **[2]**

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2 Fig. 2 shows a wind powered generator.

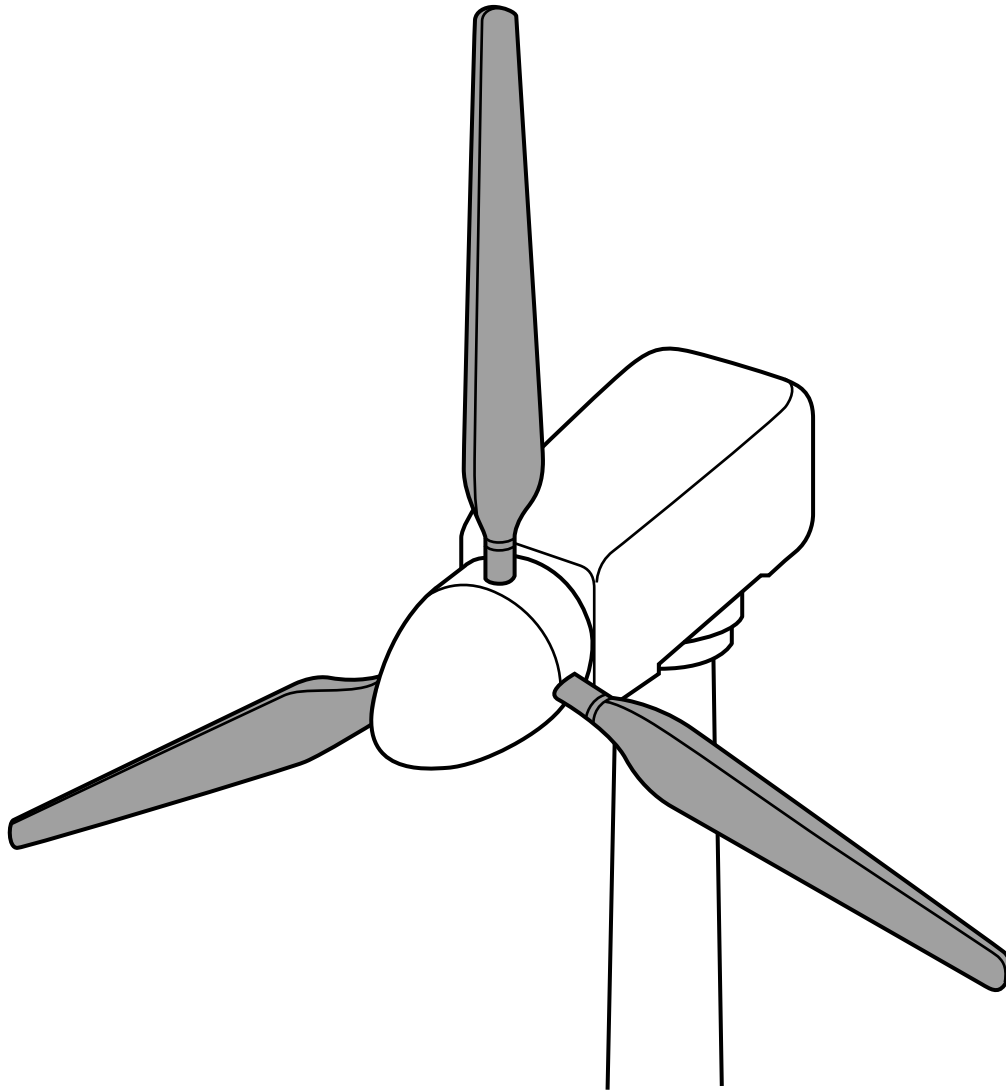


Fig. 2

The wind powered generator shown in Fig. 2 is an example of a renewable energy source.

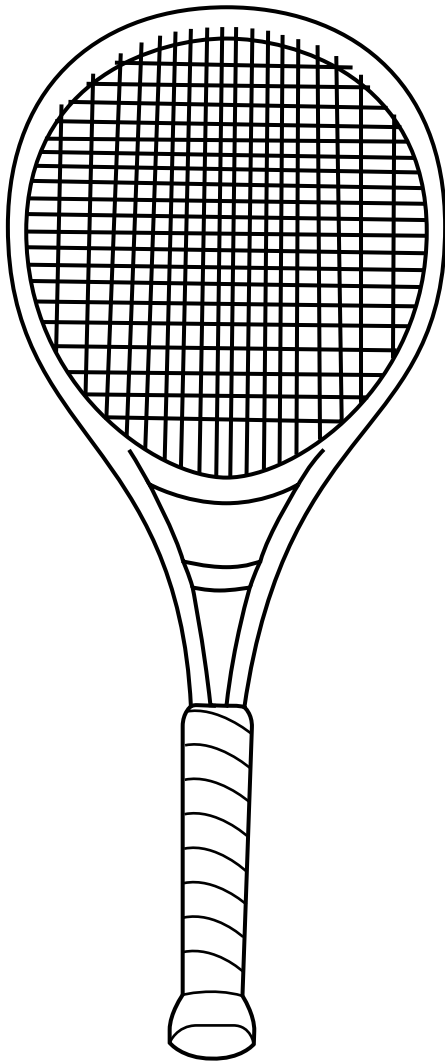
- (a) The table below shows five sources of energy. Complete the table with ticks [✓] to identify each source of energy as either renewable or non-renewable.

The first one has been done for you.

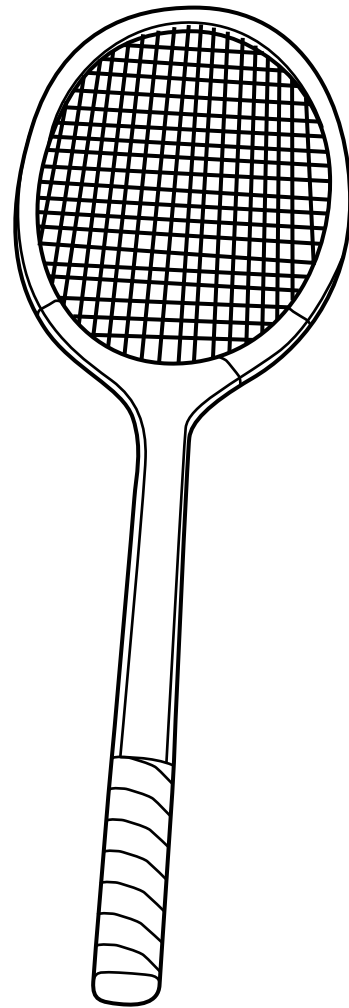
SOURCE OF ENERGY	RENEWABLE	NON-RENEWABLE
Nuclear fuel		✓
Sunflower oil		
Coal		
Natural gas		
Rechargeable battery		

[4]

3 Fig. 3 shows a modern tennis racket and a wooden tennis racket from around the 1950s.



Modern tennis racket

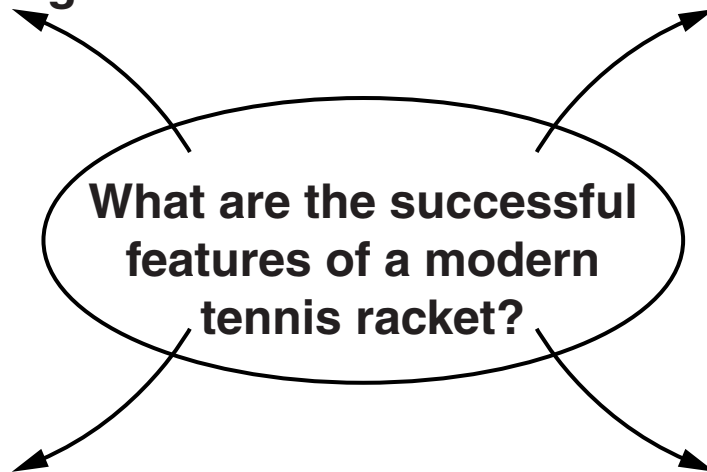


**Wooden tennis racket
from the 1950s**

Fig. 3

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

The modern tennis racket is lightweight.



[3]

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

An example has been done for you.

Point 1: The modern tennis racket is lightweight.

Explanation: Advances in materials technology have led to the development of high strength lightweight metal alloys.

(i) Point 2 _____

Explanation

(ii) Point 3 _____

Explanation

[4]

- (c) Tennis rackets are a good example of products that have changed over time. However, some products, often termed ‘design classics’ remain relatively unchanged.**

Explain using ONE example, why some products remain relatively unchanged over time.

[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	✓
1910 – 1930	Marcel Breuer	Wassily Chair	
1920s	Coco Chanel	‘flapper’	
1870 – 1880	William Morris	Block printed wallpaper	
1960s + 1970s	Light emitting diodes	Pulsar watch	
1970s	Convenience foods	Vesta curry	

(b) Iconic product chosen _____

Give TWO reasons why the product you have chosen has been so influential.

Make specific reference to aesthetics and/or technology.

Reason 1 _____

Reason 2 _____

_____ **[4]**

[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 magazine rack in the style of the Wassily chair.	
A blouse or shirt in the ‘flapper’ style.	
A wrist watch in the William Morris style.	
A moisture sensor with an LED display.	
A convenience food product for a person with wheat intolerance.	

(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 opposite.

1 _____

2 _____

3 _____

4 _____

_____ **[4]**

(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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