

**GENERAL CERTIFICATE OF SECONDARY EDUCATION**  
**DESIGN AND TECHNOLOGY**  
**PRODUCT DESIGN**

**A554**

Designing Influences

Candidates answer on the question paper.

**OCR supplied materials:**

None

**Other materials required:**

None

**Monday 6 June 2011**

**Morning**

**Duration: 1 hour 30 minutes**



Candidate forename		Candidate surname	
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Centre number						Candidate number				
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**INSTRUCTIONS TO CANDIDATES**

- Write your name, centre number and candidate number in the boxes above. 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.
- Do **not** write in the bar codes.

**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 (\*).
- This document consists of **16** pages. Any blank pages are indicated.

SECTION A

You are advised to spend 45 minutes on this section.

1 Fig. 1 shows a child's trainer cup.

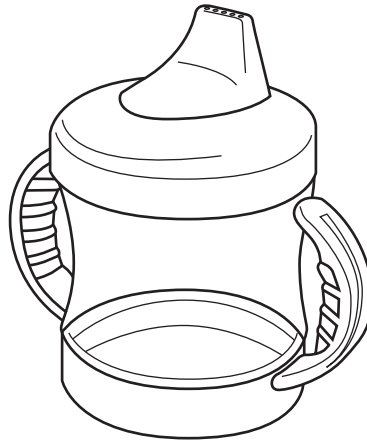


Fig. 1

(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]



2 Fig. 2 shows a wind powered generator.

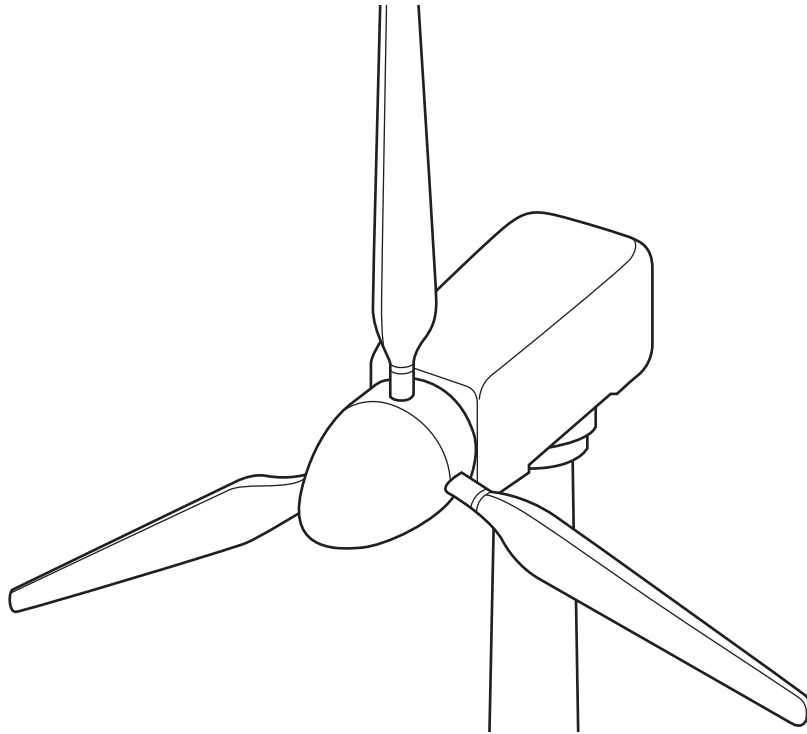


Fig. 2

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.

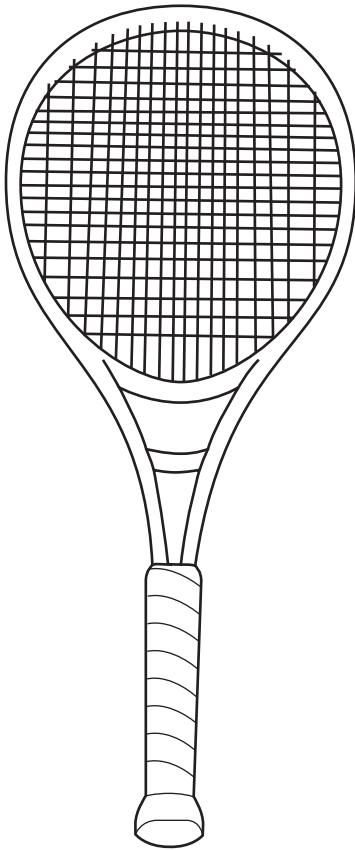
The first one has been done for you.

Source of energy	Renewable	Non-renewable
Nuclear fuel		✓
Sunflower oil		
Coal		
Natural gas		
Rechargeable battery		

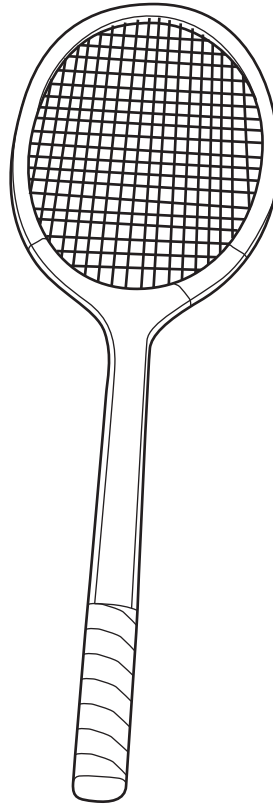
[4]



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



Modern tennis racket

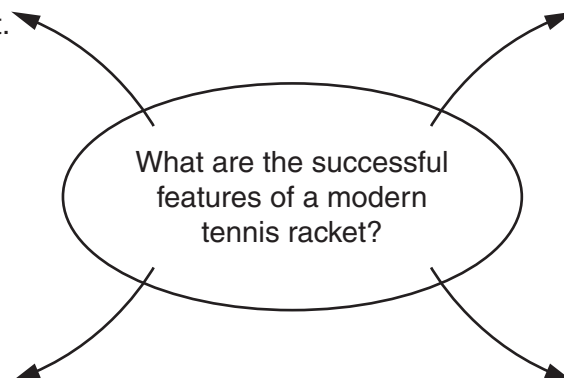


Wooden tennis racket from the 1950s

**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]





(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]

**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 above.

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.

- (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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