

351/01

**DESIGN AND TECHNOLOGY AS**

**PRODUCT DESIGN DT1**

A.M. TUESDAY, 6 June 2006

(2½ Hours)

**ADDITIONAL MATERIALS**

In addition to this examination paper, you will need a 12 page answer book.

**INSTRUCTIONS TO CANDIDATES**

Answer **six** questions from Section A.

Answer **one** question from Section B.

**INFORMATION FOR CANDIDATES**

When and where appropriate, answers should be amplified and illustrated with sketches and/or diagrams.

**Section A** answers should be no more than half a page. This section is designed to demonstrate your **breadth** of knowledge in Product Design.

Your **Section B** answer should be substantial and demonstrate your **depth** of knowledge in Product Design.

You are reminded of the necessity for good English and orderly presentation in your answers.

## SECTION A

*Answer **six** questions from this section.*

*The maximum length of each answer should be no more than about 150 words.  
This section is designed to demonstrate your **breadth** of knowledge in Product Design.*

*Each question carries 8 marks.*

1. (a) For a named synthetic material state **two** specific uses and **two** properties or characteristics. 2 × [2]  
 (b) For a named natural material state **two** specific uses and **two** properties or characteristics. 2 × [2]
  
2. There are many ways of joining materials and components permanently and temporarily.
  - (a) Describe **two** permanent methods of joining *similar* materials. 2 × [2]
  - (b) Describe **two** temporary methods of joining *dissimilar* materials. 2 × [2]
  
3. Materials used in the production of products have to undergo both *qualitative* and *quantitative* testing.  
 Explain **each** of these terms. 2 × [4]
  
4. There are a number of specific *production stages* when manufacturing products.  
 Describe **two** of these production stages with reference to a specific product. 2 × [4]
  
5. *Primary Research* and *Secondary Research* draw from a variety of sources in order to produce reliable information for the product designer.
  - (a) Describe what is identified through *primary research*. [4]
  - (b) Describe what is identified through *secondary research*. [4]
  
6. Name a product which has improved significantly through the introduction of modern materials. [2]  
 Describe **three** changes that have improved the product as a result of the modern materials being introduced. 3 × [2]

7. *Above the line* and *below the line* are terms used in product analysis.

In relation to a named product:

- (a) explain the term *above the line*; [4]  
(b) explain the term *below the line*. [4]

8. Working models and prototypes may be created by using a range of traditional materials or through computer generated models.

- (a) State **two** benefits of producing models using traditional materials.  $2 \times [2]$   
(b) State **two** benefits of producing computer generated models.  $2 \times [2]$

9. *Bought in* or standardised *part assembled* components are used by manufacturers in the production of products.

- (a) Explain what is meant by *bought in* or standardised *part assembled* components. [2]  
(b) State **three disadvantages** to the manufacturer of using *bought in* or standardised *part assembled* components.  $3 \times [2]$

10. Products often display compulsory quality marks.

- (a) Explain why quality marks are important to the public. [2]  
(b) State **three** examples of tests that are applied to products to gain a quality mark.  $3 \times [2]$

**SECTION B**

Answer **one** question from this section.

Your answer should be substantial and show the **depth** of your knowledge in *Product Design*.

Each question carries 22 marks, 2 of which are for clarity of communication.

- 11.** *Ethical issues increasingly influence the design, production and eventual disposal of a product.*

Discuss this statement fully and state to what extent you agree with it. [22]

- 12.** Composites and regenerated materials allow designers and manufacturers to produce products not previously available to the consumer.

With reference to a particular product or range of products, describe the benefits of composite and regenerated materials to the designer, manufacturer and consumer. [22]

- 13.** Problem solving strategies are used by product designers to initiate design ideas.

Describe **two** problem solving strategies and evaluate their effectiveness in particular problem solving situations.  $2 \times [10]$

Clarity of Communication. [2]