

General Certificate of Education
Summer 2003
Advanced Level Examination



**DESIGN AND TECHNOLOGY: PRODUCT DESIGN
(3D DESIGN)
Unit 6 Written Paper (PD6D)**

6551

Wednesday 25 June 2003 Afternoon Session

In addition to this paper you will require:

- an unlined answer book (7024) which is provided separately;
- normal writing and drawing instruments;
- a colour Insert Sheet (enclosed)

Time allowed: 3 hours

Instructions

- Use blue or black ink or ball-point pen. Pencil and coloured pencils should be used only for drawing.
- Write the information required on the front of your answer book. The *Examining Body* for this paper is AQA. *The Paper Reference* is PD6D.
- **Answer one question from each of Sections A, B and C and one other question from any section.**
- Use the Insert Sheet included to help you answer questions **B1(a)** and **C2**.

Information

- The maximum mark for this paper is 100.
- 24 marks are allocated to each question and 4 marks overall are allocated for quality of written communication.
- Mark allocations are shown in brackets.
- This paper carries 20 per cent of the total marks for Advanced Level.
- You are reminded of the need for good English and clear presentation. The quality of your written communication will be assessed across all questions.

Advice

- Your answers should be illustrated with sketches and/or diagrams wherever you feel it is appropriate.

Answer **one** question from **each** of the three sections and **one** other question from any section.

SECTION A

Materials and Components

1 The range and versatility of polymers (plastics) has increased considerably in recent years.

With reference to **three** different products:

- (a) Name **three** specific polymers and describe an application where **each** has replaced a non-polymer material. *(3 x 4 marks)*
- (b) Explain the reasons why **each** of the polymers you have named is used in preference to the original material. *(3 x 4 marks)*

2 In the past mass-produced products were manufactured and stock piled until needed. Today manufacturers prefer to produce their products quickly and only in the quantities requested by their customers.

With reference to the methods used and the manufacturers' desire to achieve efficiency, explain, in detail, the advantages and disadvantages of this approach to manufacturing. *(24 marks)*

SECTION B**Design and Market Influences**

- 1 (a) The chair shown in **Figure 1** on the Insert Sheet has many of the characteristics of the Bauhaus principles of design whilst the chair in **Figure 2** is in the style associated with post modern design schools.

Compare and contrast the two chairs showing how the design and manufacture of both is due to specific influences, associated with each design movement. *(2 x 8 marks)*

- (b) Describe, with the aid of sketches, a product that you have designed. Show how you made use of materials and form in order to respond to specific functional and aesthetic needs.

(1 x 8 marks)

- 2 The world of nature has proved to be an excellent source of inspiration for the design of a wide range of products.

With reference to features such as mechanical, structural and aesthetic, demonstrate how the design of **two different** products may have been influenced by the study of forms and principles found in nature. *(2 x 12 marks)*

TURN OVER FOR SECTION C

SECTION C**Processes and Manufacture**

1 Describe ways in which the design and manufacture of **one** of the following products has changed in recent years in order to make our use of energy more efficient.

- (a) Motor vehicles
- (b) Domestic appliances
- (c) Domestic buildings

You should make reference to the use of raw materials, the manufacture of the product, its function and use. *(24 marks)*

2 Packaging, such as that shown in **Figure 3** on the Insert Sheet, has become an important part of the promotion and sale of products.

Describe the development of materials and production techniques which are used in packaging today.

In your answer you should consider the requirements of the manufacturer, retailer and consumer.

(24 marks)

END OF QUESTIONS

Summer 2003: GCE Design and Technology: Product Design
Unit PD6D
The photographs on this sheet are for use in answering:
Questions B1(a) and C2

Figure 1 Tubular steel and canvas chair by Mart Stam 1926



Figure 2 Steel and glass chair by Danny Lane 1984

Figures 1 and 2 reproduced by kind permission of The Ivy Press Limited



Figure 3 Washing powder and liquid packaging
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