

General Certificate of Education
June 2004
Advanced Level Examination



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

PD6D

Friday 18 June 2004 1.30 pm to 4.30 pm

In addition to this paper you will require:

- an unlined answer book (7024) which is provided separately;
- normal writing and drawing instruments.

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.**

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 evolution and improvement of products is often a result of the use of new materials and processes of manufacture.

Name a specific product from **two** of the three areas below and describe the evolution and improvements which have taken place with regard to **both** materials and methods of manufacture.

- (a) An item of sports equipment.
- (b) A component or part of a motor vehicle or cycle.
- (c) A handheld household appliance or tool such as a hairdryer or electric drill.

You should explain the benefits which the various changes have brought to **both** the consumer and the manufacturer.

(2 × 12 marks)

- 2 Most manufactured products require a surface finish, either to enhance appearance or provide protection from the environment. The surface finish may be specifically applied or it may be due to manufacture and processing methods.

- (a) Name a specific material which requires a surface finish for protection and describe **two different** finishes which could be applied, explaining what protection they provide.

(2 × 8 marks)

- (b) Name a specific product where a surface finish has been used to enhance its appearance and describe what aesthetic improvements have been achieved.

(8 marks)

In each case you should refer to the environmental conditions, the methods of application and the specific benefits or difficulties associated with a particular surface finish.

SECTION B**Design and Market Influences**

- 3 “Between two objects equal in function and cost, the more beautiful sells” was Raymond Loewy’s definition of design. The designers Richard Seymour and Dick Powell refer to an “X factor” which makes one product stand out from others on the retailer’s shelf.

With reference to **two different** examples of manufactured products explain, with the aid of sketches, how aesthetic appeal, style and fashion have been vital ingredients in the promotion, marketing and overall success of each product.

(2 × 12 marks)

- 4 Sustainability and the environmental performance of a product is becoming increasingly important.

For a named product of your choice, carry out a life cycle assessment. Make reference to the following issues in your answer: the extraction and processing of raw materials, manufacture and distribution and the use and final disposal of the product.

You may produce your answer in the form of an essay or as a chart.

(24 marks)

TURN OVER FOR SECTION C

Turn over ►

SECTION C**Processes and Manufacture**

- 5 (a) Quality control and quality assurance are both important systems which are used to ensure that products meet the needs and demands of the customer.

With reference to specific products, describe the methods of **both** quality control and quality assurance used during the stages of design and manufacture.

(2 × 8 marks)

- (b) The increase in the use of power tools and electrical devices within the home has resulted in a rise in the number of accidents due to the incorrect use of the equipment.

For a specific piece of equipment, describe the safety features which the manufacturer could include to limit the danger of misuse or accident.

(8 marks)

- 6 The processes of research and evaluation are essential skills within the design process.

- (a) Explain the terms *primary* and *secondary research*. With reference to a specific product, describe how research could be carried out to ensure that the manufactured product will be designed to satisfy the needs of the consumer.

(16 marks)

- (b) With reference to your own experience of the design **and** manufacture of a specific product, explain where your evaluation skills were important.

(8 marks)

END OF QUESTIONS