

General Certificate of Education
June 2007
Advanced Level Examination



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

Friday 15 June 2007 9.00 am to 12 noon

For this paper you must have:

- 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. Use pencil and coloured pencils 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 **four** questions.
Answer **one** question from each of Sections A, B and C and **one** other question from any section.
- Use the Insert Sheet provided to help you answer **Question 3**.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 100.
Four of these marks will be awarded for using good English, organising information clearly and using specialist vocabulary where appropriate.
- There are 24 marks for each question.

Advice

- Illustrate your answers 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 (a) Name a specific product that makes use of the following properties (use a different product for each of your answers).

- (i) the malleability of sheet steel
- (ii) the high thermal conductivity of aluminium
- (iii) the stability of MDF
- (iv) the hardness of high carbon steel.

Explain why the products you have chosen are appropriate. You should make reference to the manufacture **and** function of the products in your answers. *(4 × 5 marks)*

(b) Describe a test which could be used to determine the hardness of a sample of metal. *(4 marks)*

2 Suggest appropriate materials for **three** of the following products:

- a container for a microwave ready meal
- a fold-up pushchair/baby buggy frame
- a temporary point of sale display stand for a bookshop
- a wedding ring or similar commitment ring
- a hand made coffee table.

You should make reference to the following in your answer:

- the function and use of the product
- the manufacturing processes
- the quantity being produced. *(3 × 8 marks)*

SECTION B**Design and Market Influences**

- 3 A study of ergonomics plays an important part in the design of all products.
- (a) Analyse the products shown in the photographs on the Insert Sheet. Describe ways in which each product could be improved from an ergonomic point of view.

Figure 1 A pair of domestic scissors

Figure 2 A mobile phone

Figure 3 A can opener

You should use annotated sketches in your answer. (3 × 6 marks)

- (b) With reference to a specific named example explain how colour has been used to improve the function of a product. Use notes and sketches in your answer. (6 marks)

- 4 It has been stated that for a product to be considered to be a *good design* it should combine originality, excellence and utility.

Discuss this statement, making reference to **two dissimilar** products.

In your answer you should make reference to

- aspects of materials and manufacture
- aesthetics and style
- function and use.

(2 × 12 marks)

Turn over for Section C

Turn over ▶

SECTION C**Processes and Manufacture**

- 5 (a) With reference to a specific named product, explain what issues the designer/manufacturer should take into account in order to lessen environmental impact.

In your answer you should make reference to

- manufacturing processes
- use and disposal of the product.

(14 marks)

- (b) It is important that a manufactured product satisfies a commercial need.

Explain in detail the methods used by a designer/manufacturer to improve the commercial success of a new product. *(10 marks)*

- 6 Many products have been redesigned due to the development of plastics, which can be manufactured to meet specific needs.

For **each** of the following, name a specific product and suggest a suitable plastic material from which it could be manufactured.

Explain what properties of the plastic would be required to suit the manufacture, function and use of the chosen product.

- (a) an item of kitchen equipment

(8 marks)

- (b) an item of packaging

(8 marks)

- (c) a child's toy.

(8 marks)

END OF QUESTIONS

Insert

For use with answering Question 3.

Figure 1 A pair of domestic scissors



Figure 2 A mobile phone



Figure 3 A can opener

