

General Certificate of Education
June 2008
Advanced Level Examination



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

Friday 6 June 2008 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.

Time allowed: 3 hours

Instructions

- Use black ink or black 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 other section.

Information

- 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.
- The marks for questions are shown in brackets.
- 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) Laminated wood or wood based composites are often used to overcome some of the limitations of solid timber.
- (i) Describe **either** the process of lamination **or** the construction of a wood based composite. (4 marks)
- (ii) For a specific named product explain how **either** lamination **or** the use of a wood based composite has been used to improve its manufacture and function. (8 marks)
- (b) Name **two different** materials where deterioration is a problem. With reference to specific named products, explain how the deterioration can be prevented. In your answer you should state the reasons why the material was selected for each application. (2 × 6 marks)
- 2 (a) (i) Name a thermoplastic. (1 mark)
- (ii) Name a thermoset polymer. (1 mark)
- (b) For **each** of the two polymers named in part (a), describe the polymer and explain how its properties suit **both** the *manufacture* **and** *function* of a specific named product. (2 × 8 marks)
- (c) Explain why it is sometimes preferable to make products from materials other than polymers. (6 marks)

SECTION B**Design and Market Influences**

- 3 (a) It is important to produce a detailed design specification when beginning to develop solutions to a design problem.
- (i) Using examples explain the term *design specification*. (6 marks)
- (ii) Describe the stages that lead on from the identification of a problem through to the production of a design specification. (8 marks)
- (b) Explain what methods designers can use in order to safeguard their design from imitation. (4 marks)
- (c) Describe the methods that can be used to ensure that a product remains commercially successful over a long period of time. (6 marks)

- 4 Designers have found *nature* to be a source of inspiration and an important area of research for their products.

Describe **two different** products which support the above statement.

Explain how you believe the designer has used *nature* in the design of **each** of these products.

You should consider features such as mechanical, structural and aesthetic in your answer.

(2 × 12 marks)

Turn over for the next question

Turn over ▶

SECTION C**Processes and Manufacture**

- 5 (a) For a named specific product, describe how energy conservation has been taken into consideration.
In your answer you should make reference to its design, manufacture and function. (12 marks)
- (b) Explain how the application of ICT (Information Communication Technology) to PPC (Production Planning and Control) can be advantageous to a manufacturer.
In your answer you should make reference to specific examples of products and their manufacture. (12 marks)
- 6 (a) Much of today's furniture is supplied in a 'flat-pack' form.
Describe the impact that this has had upon the *traditional* furniture industry.
You should refer to the use of materials and methods of manufacture. (8 marks)
- (b) Explain the advantages and disadvantages of producing furniture in flat-pack form with reference to:
- (i) the manufacture of the furniture, (8 marks)
 - (ii) the customer. (8 marks)

END OF QUESTIONS