

General Certificate of Education  
June 2005  
Advanced Level Examination



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

Friday 17 June 2005 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;
- 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 Question 1.

**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**

- Illustrate your answers with sketches and/or diagrams wherever you feel it is appropriate.

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

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**SECTION A**

**Materials and Components**

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- 1 The photograph on the Insert Sheet shows two different types of vacuum flask which are used to keep drinks either hot or cold when away from home.

In **Figure 1**, the flask body is made from a thermoplastic whilst **Figure 2**, shows a metal bodied flask.

With reference to the physical and mechanical properties which are relevant to the function of the flask and the manufacture processes involved:

- (a) explain why polypropylene is a *suitable material* for making the flask in **Figure 1**;  
(12 marks)
- (b) explain why stainless steel *has been used* for the manufacture of the flask in **Figure 2**.  
(12 marks)

- 2 Composite materials are manufactured from more than one material in order to combine their useful properties.

- (a) Name **two different** composite materials and explain how their constituent materials contribute useful properties to each composite.  
(2 × 8 marks)
- (b) Name a product which incorporates a composite in its manufacture and explain why the material is appropriate.  
(8 marks)

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**SECTION B****Design and Market Influences**

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3 Designers make use of a range of methods to communicate their design proposals to different people.

Using specific examples, explain when and why a designer may make use of **four** of the following:

- prototype
- product rendering
- flow chart
- orthographic projection
- isometric drawing
- mood board

*(4 × 6 marks)*

4 (a) All toys sold in Europe must meet particular safety standards. Outline the key safety issues which you believe the designers should take into consideration when designing toys for children of pre-school age. *(12 marks)*

(b) With reference to your own experience, explain the use and importance of writing a product specification. *(12 marks)*

**TURN OVER FOR SECTION C**

**Turn over ►**

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**SECTION C****Processes and Manufacture**

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- 5 (a) Describe the modern methods of production used by industry to maximize efficiency. Make reference to a specific industry in your answer. *(12 marks)*

- (b) Despite the expense of handmade craft products, the place of the designer/maker is still important.

With reference to a specific area of designing and making explain why this might be so. *(12 marks)*

- 6 During your lifetime, the development of new technologies and a competitive market has led to the rapid change and evolution of products.

Using a series of annotated sketches explain how a specific product of your choice has evolved.

You should refer to technological and aesthetic developments in your answer. *(24 marks)*

**END OF QUESTIONS**

**June 2005: GCE Design and Technology: Product Design  
Unit PD6D**  
The photograph on this sheet is for use in answering:  
*Question 1*



**Figure 1**

**Figure 2**