

General Certificate of Education  
June 2004  
Advanced Subsidiary Examination



**DESIGN & TECHNOLOGY: PRODUCT DESIGN PD1D**  
**(3D DESIGN)**

**Unit 1 Materials and Components**

Wednesday 9 June 2004 Morning 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: 1 hour 30 minutes

**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 PD1D.
- Answer Question 1 and any **two** of Questions 2 to 4.
- Use the Insert Sheet included to help you answer **Questions 1 and 4**.

**Information**

- The maximum mark for this paper is 100.
- 40 marks are allocated to Question 1, 28 to each of Questions 2 to 4, and 4 marks overall for Quality of Written Communication.
- Mark allocations are shown in brackets.
- This paper carries 30 per cent of the total marks for AS and 15 per cent for A 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.

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Answer Question 1.

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1 (a) Study the photographs on the Insert Sheet provided and answer the following questions.

(i) Name a specific material that could be used in the manufacture of the plastic storage unit **Figure 1** and **Figure 2**. *(2 marks)*

(ii) Explain why this material is suitable for the storage unit. *(5 marks)*

(iii) Use notes and diagrams to describe in detail how the storage unit could be manufactured. *(10 marks)*

(b) Study the photograph of the kitchen utility trolley manufactured from solid birch **Figure 3**.

Use notes and diagrams to explain how **one** feature on the trolley could be manufactured. You should make reference to accuracy and repeatability in your answer. *(9 marks)*

(c) (i) Study the photograph of the computer desk **Figure 4**. Use notes and diagrams to describe **two** 'components' that could be used in the assembly and construction of the computer desk. *(2×5 marks)*

(ii) Give **two** benefits for the computer desk being a flat-pack design. *(2×2 marks)*

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Answer any **two** questions from 2, 3 and 4.

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- 2** For **one** specific mass produced product of your choice, made from **either** composites **or** metals, answer the following questions.
- (a) Name the product. State the specific material that the product is manufactured from and explain why this material is suitable. *(6 marks)*
  - (b) Use notes and diagrams to show how this product is manufactured. *(10 marks)*
  - (c) Give **two** reasons why this manufacturing method is suitable. *(2×3 marks)*
  - (d) Give **two** safety measures manufacturers should take to protect employees when manufacturing the product. *(2×3 marks)*
- 3** This question is about thermoplastics and thermoset plastics.
- (a) Explain what is meant by the term ‘thermoset plastics’. *(2 marks)*
  - (b) State a specific example of a thermoset plastic and name a product that is manufactured from this material. *(4 marks)*
  - (c) Explain why this plastic is suitable for the product. *(5 marks)*
  - (d) Using notes and diagrams, describe how the product is manufactured. *(10 marks)*
  - (e) Name a specific example of a thermoplastic used in packaging. *(2 marks)*
  - (f) Explain why this material is used in packaging. *(5 marks)*

**TURN OVER FOR THE NEXT QUESTION**

**Turn over ►**

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- 4 A designer developing a design for a new hairdryer has made a non-working prototype model shown in **Figure 5**.
- (a) Name a specific material that the main body of the model could be made from. *(2 marks)*
  - (b) Explain why this material is suitable. *(5 marks)*
  - (c) Use notes and diagrams to show how the main body of the model could be made. *(9 marks)*
  - (d) Describe in detail how the body of the model would be given a high quality finish as shown in **Figure 5**. *(6 marks)*
  - (e) If the hairdryer was to be manufactured in volume as a working product, state a specific material that it could be made from and explain why this is suitable. *(6 marks)*

**END OF QUESTIONS**

**June 2004: GCE Design and Technology: Product Design  
Unit PD1D**  
The photographs on this sheet are for use in answering:  
*Questions 1 and 4*



**Figure 1** – Plastic storage unit  
(partly assembled)

**Figure 2** – Assembled storage unit



Turn over ▶



**Figure 3** – Kitchen utility trolley



**Figure 4** – Computer desk



**Figure 5** – Hairdryer