

General Certificate of Education  
January 2005  
Advanced Subsidiary Examination



**DESIGN AND TECHNOLOGY: PRODUCT DESIGN PD1D**  
**(3D DESIGN)**  
**Unit 1 Materials and Components**

Monday 10 January 2005 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, 2 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 are 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 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 Question 1.

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1 (a) Study the Insert Sheet provided.

Choose **two** products from the list below and answer the following questions.

- Picnic cutlery
- Yoghurt pot
- Tennis racket
- Cricket bat

(i) Stating the **two** chosen products, name a suitable specific material used in their manufacture. *(2 x 2 marks)*

(ii) Explain what properties make these materials suitable for these two products. *(2 x 6 marks)*

(iii) Using notes and diagrams, explain how **each** of these products is manufactured. *(2 x 9 marks)*

(b) The disposable cup shown on the Insert Sheet is made from expanded polystyrene. Explain why this is a suitable material for the cup. *(6 marks)*

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

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- 2 (a) Compare and contrast the **two** watches shown in **Figure 1** and **Figure 2** on the Insert Sheet in terms of the materials used and their methods of manufacture. *(2 x 10 marks)*
- (b) Describe the health and safety measures you would take when using machines or power tools in a school or college workshop. *(8 marks)*
- 3 (a) Name a common application for **each** of the following materials.
- (i) Rough sawn pine
  - (ii) Low-density polyethylene (LDPE)
  - (iii) Acrylic sheet
  - (iv) Plywood sheet *(4 x 1 mark)*
- (b) Explain why **each** material is suitable for your named application. *(4 x 6 marks)*

**TURN OVER FOR THE NEXT QUESTION**

**Turn over ►**

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4 Study the photographs of the scooter in **Figure 3** on the Insert Sheet.

- (a) Name a suitable specific material for the *frame* of the scooter. (2 marks)
- (b) Explain why this material is suitable. (6 marks)
- (c) The scooter has been fabricated. Use notes and diagrams to describe **two** methods of fabrication that have been used. (2 x 5 marks)
- (d) Explain why fabricating is the best method of manufacture for the scooter. (4 marks)
- (e) The tyres on the scooter have been made from a polymer. Describe the properties of polymers that make them suitable for this application. (6 marks)

**END OF QUESTIONS**

Refer to these photographs for Question 1(a)

Picnic cutlery



Yoghurt pot



Tennis racket



Cricket bat

® 1996 Leaping Panther Device is a registered trademark of Slazenger's Limited

Refer to this photograph  
for Question 1(b)

Expanded polystyrene cup



Turn over ►

Refer to these photographs for Question 2 and Question 4

**Figure 2**

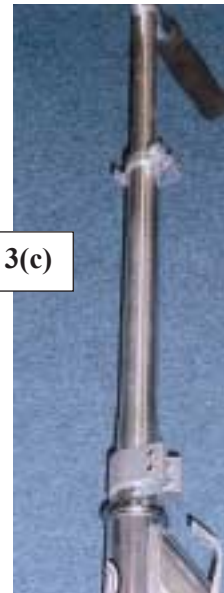


**Figure 1**

The photograph shows a semi-transparent, pink-coloured plastic sports/fashion watch. The watch has a 'robust' shock and waterproof construction. Not reproduced here due to third-party copyright constraints.



**Figure 3(a)**



**Figure 3(c)**



**Figure 3(b)**



**Figure 3(d)**

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