

General Certificate of Education
January 2003
Advanced Subsidiary Examination



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

5551

Thursday 9 January 2003 Morning Session

In addition to this paper you will require:

- an unlined answer book (7024) which is provided separately;
- normal writing and drawing instruments.

Time allowed: 1 hour 30 minutes

Instructions

- Use blue or black ink or ball-point pen. Pencil and coloured pencils should only be used 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.

Information

- The maximum mark for this paper is 100.
- 40 marks are allocated to Question 1, 28 marks 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.

Answer Question 1 and any **two** of Questions 2 to 4.

- 1 (a) Give an appropriate adhesive you would use to join each of the following materials. In **each** case give its correct name and explain why the adhesive is suitable.
- (i) Acrylic to acrylic;
 - (ii) Melamine formaldehyde laminate to chipboard;
 - (iii) MDF to MDF;
 - (iv) Aluminium to mild steel.
- (4 x 3 marks)*
- (b) Some products require parts to be removed periodically. Using notes and diagrams name and describe **two** different joining methods that would allow this.
- (2 x 6 marks)*
- (c) Some products are often assembled from standard (bought in) components.
- (i) Using notes and diagrams, describe **two** examples where products have been assembled in this way.
- (2 x 6 marks)*
- (ii) Explain the benefits of manufacturing products using standard (bought in) components.
- (4 marks)*
- 2 (a) Name a common application for **each** of the following materials:
- (i) Foamboard;
 - (ii) Corrugated cardboard;
 - (iii) Expanded polystyrene;
 - (iv) High impact polystyrene sheet.
- (4 x 1 mark)*
- (b) Explain why **each** material is suitable for that application.
- (4 x 6 marks)*

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- 3 Timbers require finishes to preserve them and/or to enhance their appearance.
- (a) Explain why, when used outside, timbers deteriorate if not treated with a preservative. *(6 marks)*

 - (b) Name **one** method of preserving exterior timber. Explain how this method is applied/achieved. *(8 marks)*

 - (c) Name a finish that is used to enhance the natural colour and grain of interior timber. Describe how your chosen finish is applied. *(8 marks)*

 - (d) Explain why timber should be seasoned before being used. *(6 marks)*
- 4 (a) Describe a **commercial** application for **each** of the following metals and explain the properties that make them suitable for those particular products.
- (i) Stainless steel;
 - (ii) Aluminium;
 - (iii) Copper;
 - (iv) High speed steel.
- (4 x 5 marks)*
- (b) For **one** of the metals and applications described in part (a), give an alternative material and explain why it is suitable. *(8 marks)*

END OF QUESTIONS