



GCE AS/A level

1111/01

**DESIGN AND TECHNOLOGY
PRODUCT DESIGN DT1**

A.M. TUESDAY, 17 January 2012

2 hours

ADDITIONAL MATERIALS

In addition to this examination paper, you will need a 12 page answer book.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Answer **five** questions from Section A.

Answer **one** question from Section B.

INFORMATION FOR CANDIDATES

When and where appropriate, answers should be amplified and illustrated with sketches and/or diagrams.

Section A is designed to demonstrate your **breadth** of knowledge in Product Design.

Your **Section B** answer should be substantial and demonstrate your **depth** of knowledge in Product Design.

You are reminded that assessment will take into account the quality of written communication used in answers that involve extended writing (**Section B**).

SECTION A

*Answer **five** questions from this section.*

*This section is designed to demonstrate your **breadth** of knowledge in Product Design.*

Each question carries 8 marks.

1. Product designers use CAD (Computer Aided Design) systems to model design proposals.
 - (a) Describe **four** advantages to the designer of using CAD modelling software. [4]
 - (b) Describe **four** advantages to the manufacturer of using CAD modelling software. [4]

2.
 - (a) Name and describe a finishing process that is applied to a named material used in the manufacture of a specific product. [4]
 - (b) Describe **two** benefits that the finish brings to the product or components within the product. $2 \times [2]$

3.
 - (a) Outline **two** reasons why a named product is suitable for mass or high volume production. $2 \times [2]$
 - (b) Outline **two different** reasons why a **different** named product is suitable for batch production. $2 \times [2]$

4.
 - (a) State the purpose of a design specification. [2]
 - (b) Explain the relationship between a design specification and the process of evaluation when designing and making a product. [6]

5. Product designers could use strategies such as *inversion*, *disassembly*, *morphological analysis*, *analogy* and *lateral thinking* when solving design problems.

Describe **two** of these strategies when used to design products.

2 x [4]

6. Describe the essential features of a design process you have used to design and make products. [8]

7. *Structural*, *aesthetic* and *functional characteristics* are important considerations when designing products.

Explain **each** of these terms in relation to a named product or products.

[8]

8. The properties and characteristics of materials can be changed to suit the needs of the designer and manufacturer by the process of *combining* or *compositing*.

(a) Name **one** material produced by **each** of the above processes.

[2]

(b) Describe the improved properties and characteristics of each material which make it useful to the designer and manufacturer. 2 x [3]

SECTION B

*Answer **one** question from this section.*

*Your answer should be substantial and show the **depth** of your knowledge in *Product Design*.*

Each question carries 30 marks.

- 9.** Evaluating successful products and concern for ethical and social issues encourage designers to develop products that are effective and environmentally efficient.

Discuss the above statement in relation to named products. [30]

- 10.** Developments in new materials and new technologies have an inevitable effect on the design and manufacture of products.

Evaluate the changes that have taken place in products resulting from these developments. [30]

- 11.** Innovation is the business of putting an invention in the market place and making it a success.

Discuss the above statement. Your answer should include reference to the roles of key people who ensure the success of products. [30]