



**GCE A level**

1113/01

**DESIGN AND TECHNOLOGY  
PRODUCT DESIGN DT3**

A.M. TUESDAY, 31 January 2012

2½ 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 **three** questions from Section A.

Answer **three** questions from Section B.

Answer **two** questions from Section C.

**INFORMATION FOR CANDIDATES**

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

**Section A and Section B** answers are designed to demonstrate your **breadth** of knowledge in Product Design.

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

Candidates are reminded of the necessity for good English and orderly presentation in their answers.

**SECTION A**

*Answer **three** questions from this section.*

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

***Each question carries 8 marks.***

1. Identify **four** reasons why a designer may have to incrementally develop an existing product. 4 x [2]
  
2. Describe the main stages in the product life cycle of a *fad* product. [8]
  
3. Explain the benefits that rapid prototyping can give a product designer when modelling a design idea. [8]
  
4. Identify the difference between consumer ‘needs’ and ‘wants’ when designing products. [4]  
Give **two** examples of each of these features within a named product. 2 x [2]
  
5. Describe how the use of jigs and fixtures within manufacturing serve to improve some aspects of production. [8]

**SECTION B**

*Answer **three** questions from this section.*

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

***Each question carries 8 marks.***

6. Describe **two** examples of *Primary Specification Criteria* and **two** examples of *Secondary Specification Criteria* for a specific named product. 2 x [4]
  
7. Explain how **four** ergonomic considerations have been successfully applied to a particular named product. 4 x [2]
  
8. Outline **four** sustainability issues, when designing products, that can bring about the conservation of raw materials. 4 x [2]
  
9. Describe in detail how a product qualifies for a Patent and describe the features of the Intellectual Property rights that protect a specific named product. [8]
  
10. Outline **four** reasons why a manufacturer would choose batch production over high volume production. 4 x [2]

**SECTION C**

*Answer **two** questions from this section.*

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

*Each question carries 26 marks.*

- 11.** Explain the underlying design philosophy that has been the signature of a particular designer and describe the impact of some of the products that he/she has designed. [26]

- 12.** Describe a design icon that you admire and fully explain the reasons why it is considered to be iconic in its design genre (category). [26]

- 13.** “We live in a world of materials; it is materials that give substance to everything we see and touch.”

*(Ashby and Johnson - Materials and Design - Elsevier 2002)*

Explain how selecting appropriate materials can accentuate the visual and tactile elements within products. [26]

- 14.** Product designers will often use a ‘*toolbox*’ containing various strategies for creative thinking such as brainstorming.

Describe in detail **and** evaluate, **two** other creative thinking strategies. [26]

- 15.** “Enjoy failure and learn from it. You can never learn from success.”

*James Dyson*

Discuss how this philosophy relates to the successful design of products. [26]