



GCE A level

1113/01



S16-1113-01

DESIGN AND TECHNOLOGY – DT3

Product Design

A.M. FRIDAY, 10 June 2016

2 hours 30 minutes

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. (a) Explain the term market segmentation. [4]

(b) State the reasons why designers should be aware of market segmentation when designing specific products. [4]

2. Describe how specific jigs and fixtures are used to increase speed and ensure accuracy when manufacturing products. [8]

3. The use of ICT has a significant effect on the design and manufacture of products.
(a) Explain the benefits of ICT in pre-production prototyping. [4]

(b) Explain the benefits of ICT within stock control. [4]

4. Explain how quality standards, which are developed by the BSI (British Standards Institute) and ISO (International Organisation for Standardisation), have a positive effect on specific named products. [8]

5. Describe in detail, using diagrams where appropriate, a permanent and non-permanent method of joining specific materials. [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. Explain what you understand by qualitative and quantitative testing in relation to the selection of materials when developing products. [8]

7. Describe the important features of a design process used to design and make successful products. [8]

8. Describe a five step risk assessment plan appropriate for a named manufacturing process. [8]

9. Describe a specific process of forming a product or component in a named plastic. [8]

10. (a) Explain how concurrent engineering is used within product development. [4]

(b) Explain how reverse engineering is used in the design and development of products. [4]

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. “Truly elegant design incorporates top-notch functionality into a simple, uncluttered form.”

David Lewis, 2006.

Discuss how this statement is relevant to the work of a contemporary designer and the impact of the products that he/she has designed. [26]

12. Describe the benefits and effects that composite materials have on the success of a particular product in terms of form, function and reliability. [26]

13. Discuss the advantages of planned obsolescence within the life cycle of specific products to the consumer and to the manufacturer. [26]

14. Discuss how manufacturing methods, product life and environmental factors relate to the design and manufacture of sustainable products. [26]

15. Explain what you understand by quality control and quality assurance, and discuss their importance to the manufacturer, consumer and the environment. [26]

END OF PAPER