



GCE AS/A level

1111/01

DESIGN AND TECHNOLOGY – DT1
Product Design

A.M. THURSDAY, 10 January 2013

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. Materials having **aesthetic characteristics** and **mechanical properties** are used to fulfil certain functions within products.
 - (a) State what you understand by the terms aesthetic characteristics and mechanical properties. [4]
 - (b) For named products, identify **two** aesthetic characteristics and **two** mechanical properties to be found in the materials which have been used. [4]

2. Modelling and prototyping are two important processes which have benefits both to the client and to the manufacturer.
 - (a) Describe **two** benefits of computer generated models to the client. $2 \times [2]$
 - (b) Describe **two** benefits of rapid prototyping to the manufacturer. $2 \times [2]$

3. Continuous production lines and cell production systems are forms of production used within the manufacturing industry, in its organisation of plant and labour.

State the main features and **two** advantages of **each** of these forms of production. $2 \times [4]$

4. Products which have become design icons or classics over a period of time continue to influence designers in their work.
 - (a) Identify **two** design icons or classics. [2]
 - (b) Describe the features which classify them as design icons or classics. [6]

5. The design and manufacture of products is influenced by internal Quality Control (QC) and external Quality Assurance (QA).

Briefly describe **four** key features of **both** Quality Control and Quality Assurance. $2 \times [4]$

6. Products have 'above the line' and 'below the line' characteristics.

Explain the **two** terms in relation to a specific product or range of products. $2 \times [4]$

7. State the main purpose of a risk assessment. [3]

Describe a **five** step risk assessment plan that would be appropriate for a named manufacturing process in a school or college workshop. [5]

8. (a) Describe the functions of a design specification for both the designer and the manufacturer. [4]

(b) Explain the importance of the design specification and its relationship to the evaluation process. [4]

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. The Design Council interprets a design process used in industry as having four distinct phases.

- **Discover** – identify the design need.
- **Define** – understand the issues through detailed research.
- **Develop** – developing the product to a successful conclusion.
- **Deliver** – manufacturing the product for a specific market.

Discuss in detail the activities which could take place in **each** of the **four** phases. [30]

10. Designing and making products recyclable, repairable and with a longer lifetime will lead to higher quality, though more expensive products.

Discuss this statement in relation to the future of designed products. [30]

11. The stages of production, from sourcing materials to purchasing the product, must be effective for both the manufacturer and the consumer.

Discuss this statement in relation to a named product or range of products. [30]