



**GCE AS/A level**

1111/01

**DESIGN AND TECHNOLOGY  
PRODUCT DESIGN DT1**

A.M. THURSDAY, 20 January 2011

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 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. Three dimensional modelling and prototyping are often used in the design and development of products.
  - (a) State **two** benefits of modelling when evaluating design proposals. 2 × [2]
  - (b) State **two** benefits of prototyping prior to manufacturing a product. 2 × [2]
  
2. Specific stages of production are used within industrial and commercial practices. These include sourcing of materials, the buying cycle, forward ordering, storage, processing, assembly, finishing, packaging/labelling and transportation.
 

Explain any **two** of the above stages. 2 × [4]
  
3. Synthetic plastics (polymers) have increasingly replaced traditional materials within product design and manufacturing.
 

Name **two** specific products where synthetic plastics have replaced traditional materials. For **each** product explain the specific advantages these new polymers bring to the product. 2 × [4]
  
4. Internal Quality Control (QC) and external Quality Assurance (QA) influence both the design and manufacture of products.
 

Describe the key features of **both** Quality Control and Quality Assurance. 2 × [4]
  
5.
  - (a) Define the term *Just in Time* (JIT) manufacture. [2]
  - (b) List **three** benefits of JIT to the manufacturing process. 3 × [2]
  
6. Successful innovative products include both *above the line* and *below the line* characteristics.
 

Explain these **two** terms in relation to a specific product or range of products. 2 × [4]

7. (a) Explain the features of a named product which make it suitable for mass production. [4]  
(b) Explain the features of a named product which make it suitable for one-off production. [4]

8. Explain the following terms:

- (a) Concurrent Engineering. [4]  
(b) Reverse Engineering. [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. *A broad analysis and effective use of research to guide development of creative ideas is an essential element when designing.*

Discuss this statement in relation to your own work within product design. [30]

10. Manufacturers make use of *multi-skilled teams* or *Cells* in order to manufacture products.

Discuss the advantages and disadvantages of Cell production both to the manufacturer and to the team members. [30]

11. A small number of innovative products are acknowledged as being design classics or icons. In the case of specific products, discuss how the aesthetics, function and innovative features have contributed to this recognition. [30]