



**GCE AS/A level**

1111/01

**DESIGN AND TECHNOLOGY – DT1**  
**Product Design**

A.M. FRIDAY, 10 January 2014

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. Describe the following stages of production in relation to a specific material.
  - (a) Primary processing. [4]
  - (b) Secondary processing. [4]
  
2. Alloys and composite materials have properties and characteristics which are essential to many products.
  - (a) Name **one** alloy and **one** composite material and an appropriate application for **each**.  
2 × [2]
  - (b) Describe the composition of **each** named material. 2 × [2]
  
3. Textiles have thermal properties, metals have conductive properties and plastics have moulding properties which are all important material properties for a product designer to consider.
  - (a) Define **two** of the above properties. 2 × [2]
  - (b) Explain how these **two** properties are used in the design and manufacture of products.  
2 × [2]
  
4. Using ICT has benefits to the designer and manufacturer.
  - (a) Describe **two** areas where ICT is used effectively within designing. 2 × [2]
  - (b) Describe **two** areas where ICT is used effectively within the manufacturing process.  
2 × [2]

5. BSI (British Standards Institution) and ISO (International Organisation for Standardisation) set standards that apply to a range of products and components.

Describe **four** positive effects that these standards have on the design of products or components. 4 × [2]

6. Explain the following scales of production and provide **two** examples of products produced by each.

(a) Batch or modular production. 2 × [2]

(b) High volume production. 2 × [2]

7. JIT (Just in Time) manufacturing benefits both the manufacturer and the supplier of materials or components.

Describe the principles of JIT manufacture and its benefits to both the manufacturer and supplier. 2 × [4]

8. The range of strategies used by designers when generating and developing design ideas includes disassembly, brainstorming and trialling.

Describe any **two** of these strategies and explain how they are used by designers to generate and develop design ideas. 2 × [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. With reference to a specific product, describe how it has developed and improved over a period of time through changes in its design, developments in materials and manufacturing methods. [30]
10. Discuss how the use of a specific modern material has influenced both the design and manufacture of named products. [30]
11. *'Design is not just what something looks like and feels like. Design is how it works.'*  
Discuss this statement in relation to a number of products in everyday use. [30]

**END OF PAPER**