



GCE AS/A level

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DESIGN AND TECHNOLOGY – DT1

Product Design

A.M. WEDNESDAY, 14 May 2014

2 hours plus your additional time allowance

ADDITIONAL MATERIALS

In addition to this examination paper, you will need a 12 page answer book.

INSTRUCTIONS TO CANDIDATES

Use black ink, black ball-point pen or your usual method.

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. Synthetic plastics are increasingly replacing the use of traditional materials within product design and manufacturing.

(a) Identify TWO named products and the specific synthetic plastics that have replaced traditional materials. [2]

(b) For EACH product explain the advantages that these new synthetic plastics bring to the product.

2 × [3]

2. Product designers and manufacturers use research methodologies to investigate sources of information which aid the design and manufacture of products.

(a) Explain the terms Primary and Secondary research. 2 × [2]

(b) Describe the type of information that is gained through BOTH Primary research and Secondary research. 2 × [2]

3. Patents, Copyrights, Registered Trade Marks, Registered Design and Design Rights are distinct intellectual property rights granted by the Intellectual Property Office.

Describe the features and protection provided by TWO of the above intellectual property rights.

2 × [4]

4. Laser cutting, injection moulding, fabrication, laminating and casting are specific processes used within product manufacture.
- (a) Describe any TWO of these processes. $2 \times [2]$
- (b) State an advantage and a disadvantage of EACH process. $2 \times [2]$
5. Both solid modelling and performance modelling are used in the development of products.
- (a) Describe TWO benefits of solid modelling to the designer. $2 \times [2]$
- (b) Describe TWO benefits of performance modelling to the manufacturer. $2 \times [2]$

6. **GANTT charts, flow charts and critical path analysis charts are used by designers and manufacturers within project management.**

For any TWO of the above project management systems:

(a) State the main features of EACH; 2 × [2]

(b) Describe how they are used within project management. [4]

7(a) Explain the term Reverse Engineering. [2]

(b) Identify THREE important insights a designer could gain by conducting Reverse Engineering on a named product. 3 × [2]

8. **Anthropometric data is used in the design of products to ensure ease of use.**

Explain how designers have successfully used anthropometric data in FOUR named products.

4 × [2]

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. Global manufacturing continues to expand in order to meet the needs of consumers.**

Discuss the advantages and disadvantages of global manufacturing for the designer and manufacturer. [30]

- 10. Fashion, style and trends are important factors in the development of products, such as the continuous development of mobile technology.**

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

11. **Product designers consider aesthetics, function, maintenance, cost and disposal when developing products for mass production.**

Discuss the implications of this statement in relation to named products. [30]

END OF PAPER