



ASSESSMENT and  
QUALIFICATIONS  
ALLIANCE

# Mark scheme

# June 2003

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## GCE

# Design and Technology

# Product Design

### Unit PD6D

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## 3D Design (PD6D)

### *Quality of Written Communication*

*The following marks are allocated to the quality of the candidate's written communication. Make a separate assessment of the candidate's overall ability as demonstrated across the paper using the criteria given below.*

<i>Performance Criteria</i>	<i>Marks</i>
The candidate will express complex ideas extremely clearly and fluently. Sentences and paragraphs will follow on from one another smoothly and logically. Arguments will be consistently relevant and well structured. There will be few, if any, errors of grammar, punctuation and spelling.	4
The candidate will express moderately complex ideas clearly and reasonably fluently, through well-lined sentences and paragraphs. Arguments will be generally relevant and well structured. There may be occasional errors of grammar, punctuation and spelling.	3
The candidate will express straightforward ideas clearly, if not always fluently. Sentences and paragraphs may not always be well connected. Arguments may sometimes stray from the point or be weakly presented. There may be some errors of grammar, punctuation and spelling, but not such as to suggest a weakness in these areas.	2
The candidate will express simple ideas clearly, but may be imprecise and awkward in dealing with complex or subtle concepts. Arguments may be of doubtful relevance or obscurely presented. Errors in grammar, punctuation and spelling may be noticeable and intrusive, suggesting weaknesses in these areas.	1

**NB** This mark scheme is intended as a guide to the type of answer expected but is not intended to be exhaustive or prescriptive. If candidates offer other answers which are equally valid **they must be given full credit.**

Many responses at this level are assessed according to the **quality** of the work rather than the number of points included. The following level descriptors are intended to be a guide when assessing the quality of a candidate's response.

The candidate has a basic but possibly confused grasp of the issues.  
Few correct examples are given to illustrate points made. This candidate does not have a clear idea of what s/he is writing about.

**(low mark range)**

The candidate has some knowledge but there will be less clarity of understanding.  
Some correct examples given to illustrate points made. This candidate knows what s/he is writing about but is confused in part.

**(mid mark range)**

The candidate has a thorough understanding of the issues and has provided relevant examples to support the knowledge shown. This candidate knows what s/he is writing about and provides clear evidence of understanding.

**(high mark range)**



## Question 2

Essay style responses are anticipated but accept less formal approach. It is expected that candidates will make reference to a specific manufacturer but this is not vital.

### Advantages

No stockpile of products which can date – go out of fashion/deteriorate

No storage of components/ raw materials

No storage of buffer stock.

Ability to respond to customer needs/ trends

Competition

Supply to customer specification

Need to reduce lead time – rapid prototyping

Requires quick response manufacturing capability (QRM) + JIT

### Disadvantages

Run out of components/

At the mercy of suppliers/ transport problems

Customer delay upset

Needs good supplier relations/ flexible workforce

Not looking for a balance between advantage/disadvantage.

Accept issues relating to design leading to manufacture as well.

**Total 24 marks**

**Section B: Design and Market Influences**Question 1

It is expected that candidates will recognise and make use of 'form follows function' principles:

Use of industrial materials/ manufacture techniques

Design for mass market

Reliance upon proportion and form rather than applied or fantasy decoration techniques.

And compare these with post modern principles, bizarre use of form, materials etc to respond aesthetically

(2 x 8 marks)

- (b) Looking for equal reference to function and aesthetics and relating to the part (a) above, although this is not required in order to answer the question.

Small allocation (2) marks awarded for graphic sketching to support answer.

Realistic/ appropriate use of materials to meet stated function and aesthetic needs.

Must be specific to receive

Annotated sketch with little added description O.K.

Sketch and description **2 marks** + 6 to be allocated for responding to function/aesthetics

(1 x 8 marks)

**Total 24 marks**

Question 2

Products must be different but it is not anticipated that answers will address mechanical/structural/aesthetic in equal measure. It is hoped that more able candidates will make reference to fibonacci, golden mean etc and separate form from principles.

Wide range of possible products related to nature – radar, flight, bridge design, velcro, aerodynamics etc.

Ensure **two** different products are referred to otherwise only allocate upto 12 marks.

- NB:** (i) if more than one product is referred to ignore **but** products may include various within an area **e.g.** washing machines and TV's.  
(ii) Read whole answer and discount weakest.

(2 x 12 marks)

**Total 24 marks**

**Section C: Processes and Manufacture****Question 1**

Make sure only one product selected from list.

Extraction and / or processing of raw materials –  
 Manufacture techniques  
 Running costs  
 Energy audit etc.

Although there are obvious difference between the type of products listed, it is to be understood that the selection of a specific product should not lead to a more generous award of marks.

Motor vehicles having electric/ LPG/ engine management  
 Domestic appliances – low energy rating  
 Buildings – conservation techniques of insulation etc.

**Total 24 marks**

**Question 2**

Question asks for consideration of materials together with their associated use/production techniques.

E.g ‘fairy’ wash powder shows card box, plastic bottle and refill pack all of which have a variety of issues related to them: -

Card box – ease of transport for manufacturer to retail but limited consideration of end-user.

Generic issue of raw materials/protection of contents/ease of transport for manufacture  
 Display/advertising/recycling/initial costs/ease of use for consumer

Accept other forms of packaging described, not from photo.

**Total 24 marks**

<b>Question Total</b>	<b>96 marks</b>
<b>Quality of Written Communication</b>	<b>4 marks</b>
<b>Paper Total</b>	<b>100 marks</b>