



ASSESSMENT and  
QUALIFICATIONS  
ALLIANCE

# Mark scheme

# June 2003

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## GCE

## Design and Technology

## Product Design

### Unit PD3D

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## 3D Design Unit 3 (PD3D)

### *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. Description may be unclear.

**(low mark range)**

The candidate has some knowledge but there will be less clarity of understanding.  
Some correct examples given to illustrate points made. Description better but unclear or confused in parts.

**(mid mark range)**

The candidate has a thorough understanding of the issues and has provided relevant examples to support the knowledge shown. This candidate's answer shows clear evidence of understanding.

**(high mark range)**

**Question 1**

Candidates may use annotated sketches of bench, ergonomer etc.  
Accept bullet point lists

- (a)
- Seat height (calculated from leg length to floor)
  - May refer to seats being designed for short term use
  - Seat length (calculated from hip to knee joint)
  - Back rest height and angle (for optimum comfort)
  - Seat width (to calculate length of bench)
  - Reference to percentiles male/female for 'user group'-for the average
  - Reference to shaping of seat, arm rests for comfort.

**(Up to 2 marks per relevant point max 10 marks)**

- (b)
- No door for wheel chair access/automatic door
  - No threshold/step
  - Position of phone in easy reach for wheel chair users (not phone box location)
  - Handles/grab rails
  - Well lit
  - Perch/rest

**NB** Accept reference to the telephone e.g. length of flex, raised dot on No 5 key, aid for hearing impaired, large buttons etc.

**(Up to 2 marks per relevant point max 10 marks)**

**Total 20 marks**

Question 2**(a) Quality of communication**

- Poor quality drawings. Little or no annotation 0 – 3 marks
- Drawings are mainly 2D, untidy, limited annotation with little thought. 4 – 5 marks
- Drawings are a combination of 2D and 3D. Use of colour to enhance drawings. Annotation showing some consideration of the design requirements. 6 – 7 marks
- Drawings are a combination of 2D and 3D. Good use of colour and or texture to enhance drawings. Thorough annotation showing consideration of the design criteria. 8 – 10 marks  
**(Maximum 10 marks)**

**Range of ideas**

- Initial thoughts or simple variations of one idea. 0-3 marks
  - Limited range of feasible ideas given. 4 –6 marks
  - Adequate range of feasible ideas with some variety. 7 –10 marks
  - Varied range of appropriate and *feasible* ideas. 11 – 15 marks
- { 2 marks per ideas drawing }  
{ 3 marks per drawing if all different } **(Maximum 15 marks)**

**Originality/innovation of product (*include design ideas*)**

- Little or no originality or innovation in the design 0 – 4 marks
  - Some innovation in materials, components or in their combination. 5 – 10 marks
  - Designs show considerable originality/innovation 11 – 15 marks
- { 3 marks per innovative feature, use of material or component in an innovative way }  
{ OR 3 marks per idea showing original styling features } **(Maximum 15 marks)**

(b) **Appropriateness of materials and components**  
(include design ideas)

- Little or no reference of **specific** materials or components. 0 – 3 marks
- Limited range of materials and components. Little detail and some use of non-specific terminology 4 – 5 marks
- Some specific appropriate materials given. Evidence of components being considered 6 – 7 marks
- Good use of appropriate materials and components with specific examples clearly indicated. 8 – 10 marks

(2 marks per **specific** material or component)

**(Maximum 10 marks)**

**Methods of construction**

- Little or no reference to construction method. 0 – 3 marks
- Drawings/notes show basic consideration of construction. Some simple joining methods stated. 4 – 5 marks
- Drawings/notes show more detailed thought of construction e.g. exploded views giving more appropriate construction methods. 6 – 7 marks
- Construction given careful thought. A range of detailed appropriate methods explained/sketched. 8 – 10 marks

(2 marks per different construction method stated upto 5 marks per construction method sketched/explained)

(if industrial manufacture of specific is illustrated, award upto 5 marks per drawing)

**(Maximum 10 marks)**

**Dimensions and dimensioning**

- Limited use of dimensions. Incorrect proportions/scale. 0 – 2 marks
- Adequate dimensioning but not all correct or appropriate. 3 – 4 marks
- Drawing appropriately dimensioned. 5 – 6 marks

(3 marks for length, width, height. Upto 6 marks for L,W,H plus sub parts dimensioned. If no units are given award low mark range.)

**(Maximum 6 marks)**

**Appropriate Graphic Image**

- Little or no consideration given to graphic image. 0 – 1 mark
- Adequate image placed on final drawing. 2 – 3 marks

- Graphic image entirely appropriate. Clearly presented on final drawing. (Accept image presented elsewhere) 4 – 5 marks

**(Maximum 5 marks)****Suitability of finish**

- Specific finish named e.g. galvanizing. 0 – 1 mark
- Specific finish with basic justification given. 2 – 3 marks
- Specific finish with full justification given. 4 – 5 marks

E.g. justification why stainless steel OR a polymer does not require a finish

**(Maximum 5 marks)****Total 76 marks****Additional notes for markers:****Originality and innovation of product**

Original/innovative features may include: Self closing lids, compartments for recycling, chutes or slides to direct litter, combined bin/seat, bin/planter, bin/sign, etc, etc. Give credit for original styling features or innovative use of materials.

**Appropriateness of materials and components**

Components may include: handles, hinges, locks and catches, wheels, brackets, liners, fastenings, bolts, etc.

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