

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

MARK SCHEME for the October/November 2006 question paper

0445 DESIGN AND TECHNOLOGY

0445/01 Paper 1 (Common Core), maximum raw mark 100

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

The grade thresholds for various grades are published in the report on the examination for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses.

- CIE will not enter into discussions or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the October/November 2006 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

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| Question number | | Detail mark | Mark on script | Total Mark |
|-----------------|---|-------------|----------------|------------|
| 1 | Addition of bristles. Distinct bristles – 2, outline only – 1 | 2 | | |
| | Rendering | 2 | | |
| | Overall quality | 1 | 5 | |
| 2 | Four specification points e.g. colourful, attract attention, no small parts, rounded shape etc. No need to qualify for full marks | 1x4 | 4 | |
| 3 | (a) Two hazards e.g. fumes, splash eyes, damage skin etc. | 1x2 | 2 | |
| | (b) Mask, goggles, gloves etc. | 1x2 | 2 | |
| 4 | (a) Two advantages e.g. infinite, no pollution, low running cost etc. | 1x2 | 2 | |
| | (b) Two disadvantages e.g. not always sunny, cannot be controlled/shut off, large solar panels, expensive to set up, eyesore etc. | 1x2 | 2 | |
| 5 | (a) Engineer's square/try square | 1 | | |
| | Marking/testing right angles | 1 | 2 | |
| | (b) Scriber | 1 | | |
| | Marking on metal | 1 | 2 | |
| | (c) Spring dividers | 1 | | |
| 6 | (a) Tension and compression labelled | 1x2 | 2 | |
| | (b) Rigid, flexible | 1x2 | 2 | |
| 7 | Cam/crank If not drawn on Fig. 4 – 1 only | 2 | | |
| | Clarity | 1 | 3 | |
| 8 | Won't slip, better power transfer etc. | 1x2 | 2 | |
| 9 | (a) Any sensible device e.g. cooker, washing machine, alarm etc. | 1 | | |
| | Reason e.g. control temperature | 2 | 3 | |
| | (b) Linked to (a) e.g. thermistor, float, LDR etc. | 1 | 1 | |
| 10 | Two examples of ergonomics e.g. comfort of handle, switch easily accessible, easy adjustment etc. | 2x2 | 4 | 40 |

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| Question number | | Detail mark | Mark on script | Total Mark |
|-----------------|---|-------------|----------------|------------|
| 11 (a) | Accept any suitable points – stable in use, keeps bottle upright, accessible handle, keeps brushes clean etc. | 1x4 | 4 | |
| 11 (b) | Accept any two holding devices – elastic, clips, holes etc. Item – 1, drawing - 1 | 2x2 | 4 | |
| 11 (c) | Any suitable ideas. | | | |
| | Communication | | | |
| | A simplistic approach | 0-3 | | |
| | An appropriate approach | 3-4 | | |
| | Good and clear approach | 5-6 | 6 | |
| | Suitability | | | |
| | Simplistic designs | 0-3 | | |
| | Rather more detail, sensible solutions | 4-6 | | |
| | Accurate solutions, good fitness for purpose, detailed construction | 7-9 | 9 | |
| 11 (d) | Evaluation of each of the ideas. | 0-6 | 6 | |
| | Selection justification, | 2 | 2 | |
| 11 (e) | Quality of drawing | | | |
| | Poor line quality, proportions, little detail | 0-3 | | |
| | Good line work, use of colour, proportions, detail | 4-6 | | |
| | High standard throughout | 7-8 | 8 | |
| | Dimensions | 2 | 2 | |
| | Construction details | | | |
| | A simplistic approach | 0-3 | | |
| | An appropriate approach | 4-6 | | |
| | Good and clear approach | 7-8 | 8 | |
| 11 (f) | Suitable materials stated. | 1 | | |
| | Reasons for choice. | 3 | 4 | |
| 11 (g) | Suitable method stated. | | | |
| | Good detailed description of process, including materials (2), processes (2) and tools (2). | 6 | 7 | 60 |

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| Question number | | Detail mark | Mark on script | Total Mark |
|-----------------|---|-------------|----------------|------------|
| 12 (a) | Accept any suitable points – Matches most desks, name stands out, calendar visible, pencils upright etc. | 1x4 | 4 | |
| 12 (b) | Accept any two suitable specific materials – card, plastic sheet, paper etc. | 1x2 | | |
| | Accept any two suitable joining methods – glue flaps, tabs in slots, staples etc. | 1x2 | 4 | |
| 12 (c) | Any suitable ideas. | | | |
| | Communication | | | |
| | A simplistic approach | 0-2 | | |
| | An appropriate approach | 3-4 | | |
| | Good and clear approach | 5-6 | 6 | |
| | Suitability | | | |
| | Simplistic designs | 0-3 | | |
| | Rather more detail, sensible solutions | 4-6 | | |
| | Accurate solutions, good fitness for purpose, detailed construction | 7-9 | 9 | |
| 12 (d) | Evaluation of each of the ideas. | 0-6 | 6 | |
| | Selection justification. | 2 | 2 | |
| 12 (e) | Quality of drawing | | | |
| | Poor line quality, proportions, little detail | 0-3 | | |
| | Good line work, use of colour, proportions, detail | 4-6 | | |
| | High standard throughout | 7-8 | 8 | |
| | Dimensions | 2 | 2 | |
| | Construction details | | | |
| | A simplistic approach | 0-3 | | |
| | An appropriate approach | 4-6 | | |
| | Good and clear approach | 7-8 | 8 | |
| 12 (f) | Changes easy to make, easy to store, use of colours, designs straight to machines (CAM). Any two explained | 2x2 | 4 | |
| 12 (g) | Appropriate item | 2 | | |
| | Good communication skills | 3 | | |
| | Clear detail | 2 | 7 | 60 |

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| Question number | | Detail mark | Mark on script | Total Mark |
|-----------------|---|-------------|----------------|------------|
| 13 (a) | Accept any suitable points – does not damage bicycle, secure, easy to operate, minimal space etc. | 1x4 | 4 | |
| 13 (b) | Accept any two locking devices – key lock, combination lock etc. Lock – 1, Drawing – 1 | 2x2 | 4 | |
| 13 (c) | Any suitable ideas. | | | |
| | Communication | | | |
| | A simplistic approach | 0-2 | | |
| | An appropriate approach | 3-4 | | |
| | Good and clear approach | 5-6 | 6 | |
| | Suitability | | | |
| | Simplistic designs | 0-3 | | |
| | Rather more detail, sensible solutions | 4-6 | | |
| | Accurate solutions, good fitness for purpose, detailed construction | 7-9 | 9 | |
| 13 (d) | Evaluation of each of the ideas. | 0-6 | 6 | |
| | Selection justification. | 2 | 2 | |
| 13 (e) | Quality of drawing | | | |
| | Poor line quality, proportions, little detail | 0-3 | | |
| | Good line work, use of colour, proportions, detail | 4-6 | | |
| | High standard throughout | 7-8 | 8 | |
| | Dimensions | 2 | 2 | |
| | Construction details | | | |
| | A simplistic approach | 0-3 | | |
| | An appropriate approach | 4-6 | | |
| | Good and clear approach | 7-8 | 8 | |
| 13 (f) | Suitable materials stated. | 1 | | |
| | Reasons for choice. | 3 | 4 | |
| 13 (g) | Suitable method stated. | 1 | | |
| | Good detailed description of process, including materials (2), processes (2) and tools (2). | 6 | 7 | 60 |

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| Question number | | Detail mark | Mark on script | Total Mark |
|-----------------|---|-------------|----------------|------------|
| 14 (a) | Accept any suitable points – simple to use, easy to store, not too heavy, comfortable, easy to fold etc | 1x4 | 4 | |
| 14 (b) | Accept any four portable items – folding chairs, laptop computer, briefcase, umbrella, rucksack etc. | 1x4 | 4 | |
| 14 (c) | Any suitable ideas. | | | |
| | Communication | | | |
| | A simplistic approach | 0-2 | | |
| | An appropriate approach | 3-4 | | |
| | Good and clear approach | 5-6 | 6 | |
| | Suitability | | | |
| | Simplistic designs | 0-3 | | |
| | Rather more detail, sensible solutions | 4-6 | | |
| | Accurate solutions, good fitness for purpose, detailed construction | 7-9 | 9 | |
| 14 (d) | Evaluation of each of the ideas. | 0-6 | 6 | |
| | Selection justification. | 2 | 2 | |
| 14 (e) | Quality of drawing | | | |
| | Poor line quality, proportions, little detail | 0-3 | | |
| | Good line work, use of colour, proportions, detail | 4-6 | | |
| | High standard throughout | 7-8 | 8 | |
| | Dimensions | 2 | 2 | |
| | Construction details | | | |
| | A simplistic approach | 0-3 | | |
| | An appropriate approach | 4-6 | | |
| | Good and clear approach | 7-8 | 8 | |
| 14 (f) | Suitable materials stated. | 1 | | |
| | Reasons for choice. | 3 | 4 | |
| 14 (g) | Suitable method stated. | 1 | | |
| | Good detailed description of process, including materials (2), processes (2) and tools (2). | 6 | 7 | 60 |