This mark scheme is published as an aid to teachers and candidates, 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, which would have considered the acceptability of alternative answers.

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

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

CIE is publishing the mark schemes for the October/November 2009 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.
Section A

Part A – Product Design

1 (a) Appropriate material including:
- aluminium/brass
- acrylic/polyester resin
- hardwood – beech, yew

Reasons including:
- takes a good finish/easy to turn
- good aesthetic qualities
- easy to clean, not react to wax

2 × 1 \[3\]

(b) Description to include:
- appropriate method
- marking, turning, forming (cast resin)

Quality of description:
- fully detailed \[3–7\]
- some detail \[0–2\]

Quality of sketches \[9\]

(c) Explanation could include:
- change in process
- change in materials
- use of jigs, formers, moulds
- simplification of design

Quality of explanation:
- logical, structured \[4–6\]
- limited detail \[0–3\]

Quality of sketches \[8\]

[Total: 20]
2 (a) Description of process
- fully detailed 3–5
- some detail 0–2

Quality of sketches up to 2 7 × 2 [14]

(b) Comb/finger joint
- strong joint/resist stress
- good gluing area
- can be attractive

Vacuum forming
- one piece production/very quick
- even wall thickness
- waste reused
- complex shapes formed

Casting
- no wastage
- good structural quality
- quick production, minimal assembly and machining 3 × 2 [6]

[Total: 20]

3 Discussion could include:
Cultural issues
- avoid offence
- target needs and wants

Ethical issues
- appropriate product
- targeting/green issues

Economic climate
- pricing/promotion/placement strategies
- target market research/value for money

Examples/evidence could be
- symbols/religion
- cultural traditions
- possible inappropriate products e.g. ‘toy guns’
- excess packaging
- recycled materials or protected species (e.g. timber/fur)
- price reduction examples, complexityunnecessary product

Examination of issues
- wide range of relevant issues 4–8
- limited range 0–3

Quality of explanation
- logical, structured 4–8
- limited detail 0–3

Supporting examples/evidence 4

[Total: 20]
Part B – Practical Technology

4  (i)  Use correct rule/watch fingers
       Use mat
       Care/patience/do not attempt to cut thick sheet

(ii) Use holder/care from heated parts
     Fume awareness
     Goggles if carrying out lot of component soldering/solder removal

(iii) Hold sheet correctly
      Fix tool, correct speed
      Chuck key/goggles

(iv) Appropriate ventilation
     Keep off skin/cyano-acrylates
     Do not ingest/protect eyes (plastic solvents)

(v)  Hot component/machine
     Avoid overheating/fumes
     Use gloves when handling/forming

(vi) Appropriate ventilation/dust extraction
     User wear mask
     Eye protection if used on abrading machine

(vii) Secure tool/work-piece
      Correct speed
      Goggles/hair tied back

For five safety precautions described in detail up to 3 marks
Quality of communication 5 × 1

5 × 4  

[20]

[Total: 20]
5 (a) Name of product  

(b) Explanation of suitability

[Total: 20]

6 (a) (i) Resistance to surface marking/abrasion

(ii) Resistance of a material to tensile loading (pulling/stretching forces)

(b) (i) Hardness test described

(ii) Tensile test described

(c) Quality of explanation

Appropriate examples

[Total: 20]
Part C – Graphic Products

7 (a) Correct front elevation 4
Correct sectional view 5
Accuracy/line quality 3

(b) Discussion could include:
- ease/quantity of storage files
- portability
- digital transfer/internet

Examples/evidence could be:
- portable disc drives/USB
- global transfer/sharing of design files (leading car companies)
- internet databases e.g. anthropometric data

Examination of issues 3
Quality of explanation 3
Supporting examples/evidence 2

[Total: 20]

8 (a) Correct isometric/overall shape/proportion 3
Isometric circles 3
Twice full size 1
Accuracy quality of line-work 3

(b) Understanding of perspective 4
Quality of explanation 4
Use of examples 2

[Total: 20]

9 Description of product 2

Explanation of changes
- detailed, fully explained 4–7
- limited detail 0–3

Explanation of reasons for changes
- detailed, fully explained 4–7
- limited detail 0–3

Quality of communication 4

[Total: 20]