UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Subsidiary Level and GCE Advanced Level

MARK SCHEME for the October/November 2009 question paper

for the guidance of teachers

9705 DESIGN AND TECHNOLOGY

9705/32 Paper 32 (Written 2), maximum raw mark 120

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Section A

Part A – **Product Design**

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

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 up to 2 [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 up to 2 [8]

[Total: 20]

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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, complexity/unnecessary 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]

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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]

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5 **(a)** Name of product 5 × 1 mark [5]

(b) Explanation of suitability 5 × 3 marks [15]

[Total: 20]

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

(ii) Resistance of a material to tensile loading (pulling/stretching forces) 2 × 2 [4]

(b) **(i)** Hardness test described 4
Quality of sketch 1

(ii) Tensile test described 4
Quality of sketch 1 [10]

(c) Quality of explanation 4 maximum
Appropriate examples 2 [6]

[Total: 20]

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Part C – **Graphic Products**

7 **(a)** Correct front elevation 4
Correct sectional view 5
Accuracy/line quality 3 [12]

(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 [8]

[Total: 20]

8 **(a)** Correct isometric/overall shape/proportion 3
Isometric circles 3
Twice full size 1
Accuracy quality of line-work 3 [10]

(b) Understanding of perspective 4
Quality of explanation 4
Use of examples 2 [10]

[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 [20]

[Total: 20]

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