UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Subsidiary Level and GCE Advanced Level

MARK SCHEME for the October/November 2008 question paper

9705 DESIGN AND TECHNOLOGY

9705/03 Paper 3 (Written 2), maximum raw mark 120

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UNIVERSITY of CAMBRIDGE
International Examinations

Section A

Part A – **Product Design**

1 **(a)** description of process
- fully detailed 3–5
- some detail 0–2

quality of sketches up to 2 7 x 2 [14]

(b) injection moulding
- simple design to be repeated
- easily change identification letter/number
- accurate/good finish

die casting
- good finish
- textured
- waste can be re-used
- simple shape, easy to remove from mould

laminating
- low cost procedure
- variable thicknesses produced
- strong, can support weight
- easily repeated

3 x 2 [6]

[Total: 20]

2 **(a)** appropriate material including:
- aluminium
- acrylic or more flexible plastic
- specific hardwood or softwood
- plywood/mdf 1

reasons including:
- takes a good finish/easy to form/join
- attractive
- able to flex 2 x 1 [3]

(b) description to include:
- appropriate method
- shaping, joining
- bending

quality of description:
- fully detailed 3–6
- some detail 0–2

quality of sketches up to 2 [8]

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

quality of explanation:
- logical, structured 4–7
- limited detail 0–3

quality of sketches up to 2 [9]

[Total: 20]

3 2 D models
example could be: template/profile/specific project 1

computer modelling
example could be: use of software e.g. ProDesktop, Autodesk, specific project 1

3D mock ups
example could be: proportional models, handle shapes 1

scaled prototype
example could be: car, working model for consumer testing prior to production 1

quality of explanation
logical, fully detailed 3–4
limited detail 0–2 4 x 5

[Total: 20]

Part B – **Practical Design**

4 **(a)** rotary motion [1]
clear sketch indicating correct method of achieving motion [3]
clear labelling [1]

(b) reciprocating motion (accept linear) [1]
clear sketch indicating correct method of achieving motion [3]
clear labelling [1]

(c) oscillating motion [1]
clear sketch indicating correct method of achieving motion [3]
clear labelling [1]

(d) reciprocating motion (accept linear) [1]
clear sketch indicating correct method of achieving motion [3]
clear labelling [1]

[Total: 20]

5 wood to wood (interior use)

PVA, Resin W [1]
appropriate example [1]
area cleaned
spread with brush/applicator
hold with clamps min 30 mins
wipe clear excess
full description including most of features above [3]

wood to wood (exterior use)

PVA exterior use, Cascamite [1]
appropriate example [1]
area cleaned, glue mixed
spread with brush/applicator
hold with clamps min 2 hours
wipe clear excess/ensure no gaps/avoid skin contact
full description including most of features above [3]

metal to metal

epoxy resin, araldite [1]
appropriate example [1]
area cleaned/ degreased, glue mixed
spread with brush/applicator
hold for 4 – 6 hours
wipe clear excess/avoid skin contact
full description including most of features above [3]

plastic to plastic

tensol cement, PVC weld [1]
appropriate example [1]
area cleaned, glue mixed
spread with brush/applicator
hold for min 30 mins
avoid skin/eye contact/well ventilated area
full description including most of features above [3]

plastic to wood

impact adhesive/hot glue gun [1]
appropriate example [1]
area cleaned,
spread with brush/applicator
ensure accurate positioning/immediate contact
avoid skin contact/heat/fumes
full description including most of features above [3]

[5 x 4]

[Total: 20]

6 **(a)** toughness – resistance to sudden impact [2]
ductility – ability to be drawn into wire [2]

(b) **(i)** material [1]
example [1]

(ii) material [1]
example [1]

(c) description of impact testing system
fully detailed 3–4
limited detail 0–2 [4]

(d) discussion could include:
manufacturing possibilities
new materials
broader product possibilities
rapid production to meet market demand

issues raised	3
quality of discussion	3
examples introduced	2

[8]

[Total: 20]

Part C – **Graphic Products**

7 correct planometric/quality/scale [4]
detail - door/walls [2]
- bed [3]
- bedside unit [2]
- wardrobe [3]
- desk [3]
- sink unit [3]

[Total: 20]

8 **(a)** correct elevation

- handle	2
- intersection handle/head	2
- face	4
- line quality/construction	2

[10]

(b) torch head

- correct construction	4
- shape/accuracy	3

[7]

handle

- construction	1
- shape/accuracy	2

[3]

[Total: 20]

9 draft outline:
understanding of topic
- fully detailed 3–4
- limited detail 0–2

clarity/efficiency of instruction of outline 3
layout/method of giving instruction 3

[2 x 10]

[Total: 20]