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

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.

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.

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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
     appropriate example
     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
ductility – ability to be drawn into wire

(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]