

MARK SCHEME for the October/November 2007 question paper

9705 DESIGN AND TECHNOLOGY

9705/03

Paper 3 (Written 2), maximum raw mark 120

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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) milling
- Angle slot difficult to cut
- Accurate/good finish
- turning
- Very good finish
- Can be bored
- calendering
- Large sheets produced/cut to size
- Even thickness (3 x 2) [6]
- [Total: 20]**
- 2** (a) appropriate material including:
- Aluminium/mild steel
- acrylic
- hardwood (1)
- Reasons including:
- takes a good finish/easy to form
- easy to clean/attractive (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]**

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3 Discussion could include:

(a) aesthetics

product attraction

colour/shape

fashion trends

examination of issues

(4)

quality of explanation

(4)

supporting examples/evidence

(2)

[10]

(b) marketing strategies

promotion/placement strategies

target market research

advertising strategies

examination of issues

(4)

quality of explanation

(4)

supporting examples/evidence

(2)

[10]

[Total: 20]

Part B – Practical Design

4 (a) (i) two alloys e.g.

steel

brass

bronze

duralumin

(2 x 1)

[2]

(ii) specific materials e.g.

steel – iron/carbon 0.3–1.2%

brass – copper 65% zinc 35%

bronze – copper 90%/tin 10%

duralumin – aluminium 95%/copper 4%/manganese 1%

(2 x 2)

[4]

(iii) products

(2 x 1)

Explanation

(2 x 2)

[6]

(b) (i) tensile test described

(up to 4)

sketch

(1)

[5]

(ii) load extension graph described

[3]

[Total: 20]

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- 5 (a) (i) ability to be drawn into wire [2]
- (ii) e.g. Aluminium
Mild steel
Copper [1]
- (iii) description of process
– fully detailed (3–5)
– some detail (0–2)
- quality of sketches (up to 2) [7]
- (b) understanding of gas welding (2)
understanding of electric welding (2)
comparisons/contrasts (4)
quality of sketches (2) [10]

[Total: 20]

- 6 (a) (i) total resistance $R = \frac{R1 \times R2}{R1 + R2} (1) = \frac{36}{12} = 3 \Omega (1)$ [2]
- (ii) current in 1 resistor $V = IR (1) \quad 2 = I \times 1 \quad I = \frac{1}{2}$
 $I = 0.5 \text{ A} (1)$ [2]
- (iii) current in 6 resistor $I = 0.25 \text{ A}$ [2]
- (b) output voltage
 $V_{\text{out}} = \frac{R1}{R1 + R2} \times V (1) = \frac{3}{3 + 6} \times 9 = \frac{27}{9} (1) = 3 \text{ v} (1)$ [3]
- (c) (i) circuit to include:
relay for motor (1)
thermistor/heat sensor (1)
LED or indicator (1)
Symbols correct (2)
Circuit correct (1) [6]
- description to include use of timer circuit
detailed description (3–5)
limited (0–2) [5]

[Total: 20]

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Part C – Graphic Products

- 7 (a) (i)** Fruit juice container – card (waxed), polyethylene, aluminium
 Yoghurt pot – PVC (polyvinyl chloride) aluminium top, HIPS (High impact Polystyrene),
 PP (Polypropylene), PET (Polyethylene terephthalate)
 Protective – expanded polystyrene
 Blister pack – card/PE (polyethylene), PVC (polyvinyl chloride), PS (Polystyrene),
 PVDC (polyvinylidene chlorine)
 (4 x 1) [4]
- (ii)** suitability of materials (2 x 3) [6]
- (b)** discussion could include:
 speed of production
 quality
 rapid change
- issues raised (4)
 quality of discussion (4)
 examples introduced (2) [10]
- [Total: 20]**
- 8 (a)** correct isometric (2)
 correct assembly (1)
 frame/arcs (3)
 thread (1)
 position (1)
 handle (2)
 quality of linework (2) [12]
- (b)** correct isometric/exploded (6)
 quality of linework (2) [8]
- [Total: 20]**
- 9 (a)** design sketches (3)
 Assembly details (2)
 One sheet A4 (2)
 Graphics (1) [8]
- (b)** clear description of manufacture [4]
- (c)** explanation could include:
 change in process, press formes etc.;
 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]**