

GCSE 2004

June Series



Mark Scheme

Design and Technology: Resistant Materials Technology *(3555/Short Course Higher)*

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The answers given in the following mark schemes are neither exhaustive nor exclusive. Candidates whose answers do not appear directly on the mark scheme, but who have demonstrated knowledge, understanding, or skills relevant to the question will receive appropriate credit for their answers.

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ASSESSMENT AND QUALIFICATIONS ALLIANCE
GENERAL CERTIFICATE OF SECONDARY EDUCATION

June Examination 2004

Design and Technology: Resistant Material Technology

Short Course Higher Tier

Question 1

- (a) Any **three** correctly identified requirements.

Possible responses:

- Must securely hold the garden tools and equipment
- Must be soundly constructed/sturdy
- Must be capable of being manufactured in quantity
- Must be safe to use
- Must fit into the garden environment
- Must allow easy movement around the garden/portable
- Must be weather proof
- Must be durable
- Must give protection
- Must be easy to use
- Ergonomic reference

(3 x 1 mark)

Three correct explanations

(3 x 1 mark)

- (b) (Check for repetition)
Any **two** correctly identified requirements which

Address the specific needs of the elderly

Possible responses:

- Must be lightweight
- Must be compact
- Must have high handles
- Must be comfortable to use

(2 x 1 mark)

Two correct explanations

(2 x 1 mark)

Total 10 marks

Question 2

(a) Variety of ideas

Mark each idea separately against the following scheme

- An excellent idea which, differs in approach or principal, fulfils the design brief, specification and shows originality. (6 marks)
 - A very good idea which differs in approach or principal, fulfils the design brief and the specification. (5 marks)
 - A good idea which differs in approach or principle, fulfils most of the design brief and specification. (4 marks)
 - An idea which fulfils some of the design brief and the specification. (3 marks)
-
- An idea which is very similar to the other ideas. (2 marks)
 - A simple idea (1 mark)

(2 x 6 marks)

Quality of sketches

- Quality 3D rendered sketches (4 – 5 marks)
- Quality line sketches or an attempt at 3D sketches (2 – 3 marks)
- Simple line sketching (1 mark)

Quality of notes

- Detailed explanations (3 marks)
- Simple notes (2 marks)
- Labelling (1 mark)

Quality of Evaluation

Award up to **two** marks for **each** evaluation using the following scale:

- | | | |
|--------------------------------------|----------------|-----------|
| Good analytical thinking | <i>2 marks</i> | (2 marks) |
| Some evidence of analytical thinking | <i>1 mark</i> | (1 mark) |

Total 24 marks

Question 3

- (a) Method of construction
- | | |
|---|---------------|
| A suitable and detailed method of construction. | (6 – 5 marks) |
| A suitable detailed process with some inaccuracies. | (4 – 3 marks) |
| Limited detail of process given. | (2 marks) |
| Named process. | (1 mark) |
- Quality of sketches
- Quality 3D sketches (3 marks)
 - Quality 2D or simple 3D sketches or (2 marks)
 - Simple 2D sketches (1 mark)
- Quality of notes
- Detailed notes (2 marks)
 - labelling (1 mark)
- Up to half mark for assembly (3 marks)
Complete assembly details given (3 marks)
Some assembly details given (2 marks)
Simple assembly details given (1 mark)

Total 11 marks

Question 4

- (a) Award **one mark each** for an influential factor and **one mark** for a qualification.

Possible responses (must relate to material):

- It needs to be weather proof as it is used outside in wet conditions.
- It needs to be easy to wipe down as the garden cart is likely to get dirty.
- It needs to be contrasting colour so that it will stand out on the garden cart.
- It should have a shiny attractive finish as it is advertising the product
- It should be quick to apply to the garden cart as this will save time and money for the manufacturer.
- Doesn't need gluing
- Flexible

(4 x 1 mark)

- (b) Award **one mark each** for details relating to the design of the label using computer aided design (CAD) and **one mark** for a qualification.

Design

Possible responses:

- Use of a suitable software programme
- Inputting text
- Manipulating text

(4 x 1 mark)

Award **one mark each** for details relating to the manufacture of the label using computer aided manufacture (CAM) and **one mark** for a qualification.

Manufacture

Possible responses:

- Use of vinyl/laser cutter
- Design is down loaded to vinyl/laser cutter
- Knife/laser cuts out the lettering

(4 x 1 mark)

Total 12 marks

Question 5

- (a) Award **one** mark **each** for an influential factor and **one** mark for a qualification/justification.

Look for details relating to:

- The size of the tools
- The shape of the tools
- The weight of the tools

(4 x 1 marks)

- (b) Award **one** mark for **each** of a relevant ergonomic feature and **one** mark for a qualification

- The shape of the handle
- The positioning of switches
- The colour coding of various parts
- The use of safety features
- Rounded edges
- Textured surface

(6 x 1 mark)

Total 10 marks

Question 6

(a) **Garden furniture A** - Award **one** mark for any suitable solid wood

Possible responses:

- Beech
- Ash
- Oak
- Teak
- Mahogany
- Pine
- Birch

(1 x 1 mark)

Award **one** mark each for **two** suitable reasons

Possible responses:

- Attractive
- Strong
- Durable
- Weather proof
- Weight
- Environment

(2 x 1 mark)

(b) Award **one** mark for **each** the following details and **one** mark for a qualification:

- The initial set up cost of the machinery is very expensive
- The cost of producing a mould is very expensive
- The production of a mould is a highly skilled job
- The cost can only be recouped by producing in high volumes.

(4 x 1 mark)

Total 7 marks

Question 7

- (a) Award up to **two** marks each depending upon the quality of each explanation

Advantage

Possible responses:

- They are easier store when you get them back home
- They are easier` to transport in the back of a car
- Lighter to carry

(2 x 2 marks)

Disadvantage

Possible responses:

- You have to assemble them yourself
- They can be awkward to carry

(2 marks)

- (b) Award **one** mark **each** for an advantage and **one** mark for a qualification.

Possible responses:

Advantages

- They take up less space
- They are easier to handle
- They are easier to stack
- They are easier to transport
- The manufacturer does not have to employ people to assemble the furniture

(4 x 1 mark)

- (c) Award **one** mark each for an answer which correctly identifies a piece of information found on the outside of the garden furniture box and **one** mark for a qualification

Possible responses:

- The weight of the box
- A picture of the furniture
- A bar code
- An umbrella
- A stacking symbol
- A this way up symbol
- Logo
- Number of parts
- Tools required

(2 x 1 mark)

(d) Award **one** mark each of the following details and **one** mark for a suitable qualification

- There are no language barriers
- Does not require the handler to have any reading skills
- Quick way of giving information
- It stands out on the packaging

(4 x 1 mark)

Total 16 marks

Question 8

(a) Award **one** mark for any suitable specific plastic

Possible responses:

- HIPS
- Polycarbonate
- Polypropylene
- HDPE
- PVC

(1 x 1 mark)

(b) Award **one** mark each for correctly naming an important feature:

Possible responses:

- Rounded corners
- Draft / tapered side / sloping sides
- Extraction holes
- Smooth sides
- Gap between pots

(3 x 1 mark)

Award up to **two** marks for a correct explanation of each feature

Possible responses:

- Rounded corners – prevents thinning on the corners and thus avoids splitting the plastic. A rounded corner provides greater strength.
- Draft / tapered side / sloping sides – Allows the former to be removed from the mould.
- Extraction holes – Enables the air to be removed from deep valleys providing thus reducing the chance of webbing
- Smooth sides – Assist the removal of the former from the mould. Provides a smooth finish to the mould.

(3 x 2 marks)

Total 10 marks