



**2007 Product Design**

**Intermediate 2**

**Finalised Marking Instructions**

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## Product Design – Intermediate 2

### Section A

#### Question 1(a)

(i) *Mild steel sheet is suitable because:*

- it is strong
- it is durable
- it is cheap
- it is lightweight in sheet form
- it can be easily press-formed
- it can be easily bent/folded
- it is easy to paint
- easy to drill/pierce/punch/blank
- it can be easily finished
- easy to work
- etc.

Where the candidate has given more than two answers only the first two should be marked.

1 mark per correct response up to total of 2 marks.

**(2)**

(ii) *Suitable protective finishes*

- Galvanising
- Sheradising
- Zinc coating
- Electroplating
- Plastic lacquer
- Chrome plating
- Plastic coating
- Powder coating
- etc.

Where the candidate has given more than two answers only the first two should be marked.

1 mark per correct response up to total of 2 marks.

**(2)**

(iii) *Suitable manufacturing process*

- Compression moulding
- Injection moulding

1 mark per correct response up to total of 1 mark.

**(1)**

(iv) *Reasons for suitability of nylon*

- Nylon is hardwearing/durable
- Strong
- Tough/impact resistant
- Inbuilt colour
- It is self-lubricating
- It can be easily moulded/shaped
- Suitable for mass production
- etc.

Where the candidate has given more than two answers only the first two should be marked.

1 mark per correct response up to total of 2 marks.

**(2)**

(v) *Manufacturing process used*

- Punching
- Welding
- Blanking
- Piercing
- Drilling
- Press forming
- Folding
- Bending
- Cutting
- Shearing
- Riveting
- etc.

Where the candidate has given more than one answer only the first should be marked.

1 mark per correct response up to total of 1 mark.

**(1)**

### Question 1(b)

(i) “*Anthropometrics*”

The Chrome plated handle has been designed to suit human hand dimensions. eg hand width (expanded answer showing link between part and dimension).

Any suitable answer relating human dimensions and part or bit of the tool storage unit should be awarded 1 mark.

1 mark per correct response (including both elements of information) up to total of 2 marks

Two marks should be awarded where candidates have given an expanded answer which links one part of the unit to three or more bits of anthropometric data.

eg the chrome plated handle has been designed to fit the 95<sup>th</sup> percentile adult male hand width so that almost all potential users can fit their hands inside the handle.  
(Percentile/gender/body dimension/unit part). (2)

(ii) “*Physiology*”

The choice of sheet material makes the unit easy to move because it is lightweight.

Any suitable answer relating to human limitations, linking to part or bit of the unit. The use of physical action verbs linking to the use of the unit are to be looked for here.

1 mark per correct response (including both elements of information) up to total of 2 marks.

Two marks should be awarded where candidates have given an expanded answer which links one or two parts of the unit to three or more **justified** physiological activities.

eg the chrome plated handle has been fitted to allow the unit to be easily moved, this is because the weight will be easy to pull along with the feet rolling as you pull. (2)

(iii) “*Psychology*”

The choice of red as a colour shows that there is some danger involved in the use of equipment from the unit.

Any suitable answer relating to human thoughts or feelings, linking to part or bit of the unit.

1 mark per correct response (including both elements of information) up to total of 2 marks.

Two marks should be awarded where candidates have given an expanded answer which links one or two parts of the unit to three or more **justified** psychological feelings.

eg the locks on the drawers make you feel that the unit is safe, this is because you might think that your tools could get stolen but the locks make them look secure and you could feel that this would put off potential thieves. (2)

**Question 1(c)**

(i) *“Durability”*

The choice of nylon for the wheels will ensure the unit will last a long time and won't wear out.

Any suitable justification relating to durability, linking to part or bit of the unit.

1 mark per correct response (including both elements of information) up to total of 2 marks.

Two marks should be awarded where candidates have given an expanded answer which links one or two parts of the unit to three or more **justified** durability considerations.

eg the choice of spray paint for the finish of the unit will make it last a long time, this is because it is likely to be used in a dirty environment and it can be easily cleaned when it gets covered in grime.

**(2)**

(ii) *“Function”*

The handle at the side of the unit makes it easy to move around thus allowing the main portability function of the unit to be successful.

Any suitable answer relating to function, linking to part or bit of the unit.

1 mark per correct response (including both elements of information) up to total of 2 marks.

Two marks should be awarded where candidates have given an expanded answer which links one or two parts of the unit to three or more **justified** functional considerations.

The whole unit is good because it has lots of storage compartments that can be used to organise your tools and store them in a way that avoids damage to them.

**(2)**

(iii) “Safety”

The up and over door allows the user to get the door out of the way when accessing the tools this ensures there is no chance of the door swinging shut on the user’s hand.

Any suitable justification relating to safety, linking to part or bit of the unit.

1 mark per correct response (including both elements of information) up to total of 2 marks.

Two marks should be awarded where candidates have given an expanded answer which links one or two parts of the unit to three or more **justified** safety considerations.

eg the use of a brake on the wheels would make the unit safe, this is because it could be stopped and the brakes put on in the required position. The brakes would also stop the unit from moving around as you put tools inside it.

**Note the marking scheme for question 1 (b) and (c) is as follows**

**One part + one justification = one mark**

**One part + three justification = two marks**

**Two separate parts + two separate justifications = two marks**

**(2)**

**Question 2(a)**

(i) *“Ease of use”*

User trial/trial/user trip/user test/specific activity relating to trials etc.

(ii) *“Aesthetics”*

Questionnaire/survey/asking a group of people/visual comparison

(iii) *“Value for money”*

Comparison to other products/long term trial/specific activity relating to comparison/  
value judgement based on features/value judgement based on features in a survey  
format, etc.

Where the candidate has given more than one answer only the first should be marked.

1 mark per correct response up to total of 1 mark for each part.

**(3)**

**Question 2(b)**

*“Symbol signifies...”*

- trademark
- it is protected
- word written in particular font
- the logo has been copyrighted
- it is illegal to copy it

1 mark per correct response up to total of 1 mark

**(1)**

**Question 3(a)**

Any four relevant design issues.

1 mark for 4 correct responses up to total of 1 mark.

**(1)**

**Question 3(b)**

Each issue should be explained and justified with specific response to mouse design. If a mark is awarded the candidate must show the justified link between the issue and mouse design.

Simple design specifications attract no marks

A design specification with justified reference to mouse design attracts one mark

eg ergonomics should be researched because the mouse should fit into the users hand for comfortable usage. **(4)**



**Question 4**

- Shampoo bottle – blow moulding
- Garden hose – extrusion
- Chocolate box tray – vacuum forming
- Wooden rolling pin – turning
- Grater – press-forming

1 mark per correct response up to total of 5 marks.

**(5)**

**Question 5 (a)**

*“2 reasons for the designers to build simple models”*

- Simple models are used to develop an idea by giving a three dimensional view of a concept
- Reference to quickness/speed
- Simple models can be used to test for ergonomic and aesthetic decision making.

Any suitable answer relating to simple modelling.

1 mark per correct response up to total of 2 marks.

**(2)**

**Question 5 (b)**

*“Two materials”*

Possible materials range from plasticine and modelling clay through to plywood and acrylic. The suitable material must be linked to its properties that allow it to be modelled easily.

**No marks are awarded for the correct naming of modelling materials**

To gain marks in this section the candidate must name a suitable material and justify its suitability.

One material plus one justification is awarded one mark.

One material plus two justifications is awarded two marks.

Two materials plus four justifications is awarded four marks.

**(4)**

**Question 6 (a)**

**To gain marks in this question the candidate must give their issue consideration and justify its importance. No marks will be awarded for simple statements explaining the issues.**

*“Environmental concern”*

Thoughts around the manufacturing process, life and disposal of the chairs will lead to EC issues.

Reduce/reuse/recycle/etc.

1 mark per correct response up to total of 2 marks. **(2)**

**Question 6 (b)**

*“Choice of materials”*

The selection of hard wearing/long lasting/thickness/thermal joining/lightweight to carry/inbuilt colour/easily moulded/waterproof/heat resistant to expansion is suitable, etc.

1 mark per correct response up to total of 2 marks. **(2)**

**Question 6 (c)**

*“Consumer demand”*

Life span/durability/cost/usefulness/comfort/portability/easy to repair/disposable/blow up fun/seasonal/annual/fun element/market research.

1 mark per correct response up to total of 2 marks. **(2)**

### Question 7

**This question should be marked holistically.** Where a candidate clearly demonstrates an understanding of aesthetics in relation to descriptions of the surfboards, they should be awarded full marks.

Where a candidate clearly demonstrates no understanding of aesthetics in relation to descriptions of the surfboards, they should be awarded zero marks.

Marks should be awarded on a sliding scale from four marks for full understanding down to zero marks for no understanding.

**(4)**

[END OF MARKING INSTRUCTIONS]