



**2013 Product Design and Technology GA 3: Examination**

**GENERAL COMMENTS**

The students displayed the following areas of strength in the 2013 Product Design and Technology written examination.

- knowledge of areas of research
- an ability to draw concept maps
- awareness of forms of manufacturing
- the ability to discuss the role of the design brief in the product design process

The students displayed weakness in the following areas.

- understanding of parameters within the visual/aesthetic design factor
- describing an appropriate marketing approach
- the differences between manufacturing systems
- the role of working drawings

The following is advice for students on preparing for the examination.

- Students should use coloured pencils, water-based pens and markers or highlighters in the design option. Using only HB pencil or pen is unacceptable in the design option.
- Answers should be written in pen, but pen should not be used to draw the design option.

**SPECIFIC INFORMATION**

**Note: Student responses reproduced in this report have not been corrected for grammar, spelling or factual information.**

This report provides sample answers or an indication of what answers may have included. Unless otherwise stated, these are not intended to be exemplary or complete responses.

The statistics in this report may be subject to rounding errors resulting in a total less than 100 per cent.

**Section A**

**Question 1a.**

| Marks | 0  | 1  | Average |
|-------|----|----|---------|
| %     | 24 | 76 | 0.8     |

C – planning and production

**Question 1b.**

| Marks | 0  | 1  | Average |
|-------|----|----|---------|
| %     | 47 | 53 | 0.6     |

A – client or end user feedback

**Question 1c.**

| Marks | 0 | 1  | Average |
|-------|---|----|---------|
| %     | 7 | 93 | 1       |

D – which design best suits the needs of the client and/or end user

**Question 1d.**

| Marks | 0  | 1  | Average |
|-------|----|----|---------|
| %     | 27 | 73 | 0.8     |

C – prolong the product’s life and maintain its appearance

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## Question 2

| Marks | 0 | 1 | 2  | 3  | 4  | Average |
|-------|---|---|----|----|----|---------|
| %     | 8 | 8 | 28 | 19 | 38 | 2.7     |

Examples of possible research include: observing people using existing products, talking to people about their needs (what they want, like and dislike), testing materials, making and trialling prototypes and testing different beaters and bowl shapes.

Students were asked to describe the two areas of research. Generally, students were able to identify forms of research but found it difficult to describe them.

The following is an excerpt from a high-scoring answer.

*Product testing: It is important to test existing products to see whether what works and what doesn't work for the target audience and to work out what has been successful and not successful in past products.*

## Question 3

| Marks | 0  | 1 | 2  | 3  | Average |
|-------|----|---|----|----|---------|
| %     | 60 | 6 | 15 | 19 | 0.9     |

A parameter refers to proportion, shape and line.

Quite a few students were unable to identify a parameter within the visual/aesthetic design factor.

The following is an example of a high-scoring answer.

*Parameter: shape*

*The shape of the mixer looks like a mother holding a baby. It creates a sense of comfort and support.*

## Question 4a.

| Marks | 0  | 1  | 2  | 3  | Average |
|-------|----|----|----|----|---------|
| %     | 43 | 13 | 21 | 23 | 1.3     |

The first part of this question asked students to identify a form of disassembly, such as: no permanent joins, snap or screw joins, limiting the number of materials used, labelling materials that are used.

The second part asked students to explain the process; however, some students described which material to use in the making of the product.

The following is an example of a high-scoring answer.

*Identify: labelling*

*Explanation: labelling the different materials used, leads to what can be recycled will help speed up the disassembly process and materials will be better recycled.*

## Question 4b.

| Marks | 0  | 1  | 2  | Average |
|-------|----|----|----|---------|
| %     | 53 | 26 | 21 | 0.7     |

Students needed to demonstrate their understanding of how products are constructed through compromise within the design. Having a list of priorities allows the designers to assess the level of compromise within the design. However, students found it difficult to prioritise attributes of products.

The following is an example of a high-scoring answer.

*By creating priorities, the designer can make sure that the major components of the design have been met, such as recycling. This allows the designer then to make sure that the greatest needs have been met.*

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## Question 5a.

|              |          |          |                |
|--------------|----------|----------|----------------|
| <b>Marks</b> | <b>0</b> | <b>1</b> | <b>Average</b> |
| <b>%</b>     | 35       | 65       |                |

## Question 5b.

|              |          |          |          |                |
|--------------|----------|----------|----------|----------------|
| <b>Marks</b> | <b>0</b> | <b>1</b> | <b>2</b> | <b>Average</b> |
| <b>%</b>     | 41       | 25       | 34       |                |

Students could have focused on the monetary cost to the manufacturer or the safety impact to the end user.

The following is an example of a high-scoring answer.

*Identify: electrical safety standard*

*Describe: the product could cause potentially harm and danger to the end user by not complying with electrical standards.*

## Question 6

|              |          |          |          |          |          |          |          |                |
|--------------|----------|----------|----------|----------|----------|----------|----------|----------------|
| <b>Marks</b> | <b>0</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>Average</b> |
| <b>%</b>     | 24       | 4        | 14       | 16       | 18       | 10       | 13       |                |

Students had a range of steps to choose from, such as: design brief, design options, research, visualisations.

The following is an example of a high-scoring answer.

*Step: Identify client, user, need, problem or opportunity:*

*Description: This step allows the student to research the needs of users, define the requirements for the product and make sure they have a clear understanding who the product is for.*

*Step: Product design, planning and prototype:*

*Description: Draw sketches, refine design ideas, research specific aspects of the design – materials, motor, beaters, bowls, develop CAD drawings, create a prototype, trial and test the prototype.*

## Question 7

|              |          |          |          |          |                |
|--------------|----------|----------|----------|----------|----------------|
| <b>Marks</b> | <b>0</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>Average</b> |
| <b>%</b>     | 38       | 5        | 22       | 35       |                |

Students seemed to find it difficult to identify an emerging technology.

The following is an example of a high-scoring answer.

*Identify: CAD – computer aided drawing*

*Explanation: computer drawing of the mixer provides greater accuracy and the ability for the designer is able to quickly make to make changes easily without having to redraw the product from the beginning.*

## Question 8

|              |          |          |          |          |          |                |
|--------------|----------|----------|----------|----------|----------|----------------|
| <b>Marks</b> | <b>0</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>Average</b> |
| <b>%</b>     | 20       | 16       | 35       | 16       | 13       |                |

Students were asked to describe a specific marketing approach for the target audience – ecologically conscious consumer – not define the terms.

The answer therefore needed to look at where this target group (ecologically conscious consumer) would buy products. The question was not aimed at the general public and their shopping habits.

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## Question 9

| Marks | 0  | 1  | 2  | 3  | Average |
|-------|----|----|----|----|---------|
| %     | 23 | 31 | 26 | 19 | 1.4     |

The following is an example of a high-scoring answer.

*A good understanding of the target market is important before the product is made so that the product is priced to suit the market. During development if the materials used will make the product too expensive then decisions can be made to change before it goes into production and no one may buy it because it is too expensive.*

## Question 10

| Marks | 0 | 1  | 2  | 3  | 4  | 5 | 6 | Average |
|-------|---|----|----|----|----|---|---|---------|
| %     | 8 | 13 | 26 | 23 | 18 | 8 | 4 | 2.7     |

Students needed to show how the design brief played a strategic and important role in the whole product design process, not just at the initial stage.

### General comments

- Weak students tended to focus on the investigating and defining stage only.
- Some students did not explore the topic.
- Strong responses gave a thorough understanding of the relationship between the design brief and different stages and steps of the Product design process.
- Students needed to explore the significance of the relationship in the extended response.

The following is an example of a high-scoring answer.

*The design brief is a reference point that the designer will continually go back to throughout the Product Design Process. When they are doing research or are doing drawings during the investigating and defining stage, they can refer back to what the client has asked for to make sure that they are researching and drawing relevant information. They also need to understand that during the final process of making during the planning and production stage that if they need to alter or change the product then they need to make sure that the client has been informed and the design brief reflects these changes. The evaluation stage of the product also allows the design brief to assess how well the product has met the needs of the client. It allows the client and the designer to have a reference point to which they can assess whether the design has met the needs of the client. Overall, the design brief is a contract which clearly tells the client and the designer what the requirements of the product are.*

## Section B

### Question 1a.

| Marks | 0  | 1  | Average |
|-------|----|----|---------|
| %     | 73 | 27 | 0.3     |

### Question 1b.

| Marks | 0  | 1  | 2  | Average |
|-------|----|----|----|---------|
| %     | 77 | 10 | 13 | 0.4     |

Students tended to identify a role for the product, such as keeping protected from the sun, space for pamphlets rather than the primary function of the product.

The following is an example of a high-scoring answer.

*Does the product reflect what the stall holder makes and sells?  
The council would like to make sure that there is some relationship between how the stall holder presents themselves and what they sell.*

### Question 2

| Marks | 0  | 1  | 2  | 3  | Average |
|-------|----|----|----|----|---------|
| %     | 14 | 12 | 24 | 50 | 2.1     |

Students needed to provide their answer as a concept map.

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## Question 3a.

| Marks | 0  | 1  | Average |
|-------|----|----|---------|
| %     | 53 | 47 | 0.5     |

Students were asked to state a different form of exploring their ideas, rather than researching ideas. Students could have used mood boards, Venn diagrams, flow charts and visualisation. They could workshop with other students, brainstorm, redefine the problem, rephrase the questions.

## Question 3b.

| Marks | 0  | 1  | 2  | 3  | Average |
|-------|----|----|----|----|---------|
| %     | 55 | 12 | 17 | 16 | 1       |

Students were asked to justify the value of their chosen method.

The following is an example of a high-scoring answer.

*Workshop with other students*

*By working with other students on my design, I can gain alternative viewpoints and suggestions that I may not have thought about. Other students can give me feedback on my suggestion and provide constructive criticism about my ideas. I can develop from my group alternative pathways to look at the problem rather than head down one specific way. This will allow me to think of a range of directions that I may not have thought of prior to creating or researching.*

## Question 4

Students need to remember that the presentation is a design option and it needs to communicate a range of information.

### Question 4i.

| Marks | 0 | 1  | 2  | 3  | Average |
|-------|---|----|----|----|---------|
| %     | 9 | 28 | 39 | 23 | 1.8     |

Students who gained high marks were able to demonstrate the overall aim of the product, which was to show a correlation between all equipment and personal attire used by the stallholders to reflect what each stallholder made. Students demonstrated different levels of understanding in this question.

### Question 4ii.

| Marks | 0  | 1  | 2  | 3  | Average |
|-------|----|----|----|----|---------|
| %     | 16 | 19 | 28 | 37 | 1.9     |

Students use of the boxes has improved. Students need to understand that a process is being asked for and simply showing a piece of machinery, or a completed process, will not gain full marks.

### Question 4iii.

| Marks | 0  | 1  | 2  | 3  | Average |
|-------|----|----|----|----|---------|
| %     | 11 | 37 | 34 | 18 | 1.6     |

Students must use drawing implements to communicate their design option. Students must understand that this point is about communicating design options through visual, tactile and aesthetic Product design factors. Students who just stated what colours they would use received no marks. Students should refer to the Study Design, p.14 or p.43

### Question 4iv.

| Marks | 0  | 1  | 2  | 3  | Average |
|-------|----|----|----|----|---------|
| %     | 10 | 23 | 32 | 35 | 1.9     |

Students were required to annotate on the drawing how the specifications have been met. Students who annotated three specifications were able to gain high marks. Students need to clearly annotate the specifications.

### Question 4v.

| Marks | 0 | 1  | 2  | Average |
|-------|---|----|----|---------|
| %     | 8 | 52 | 40 | 1.3     |

Students showed the assessors that they were able to communicate the design option by not having too many lines or written work around the drawing. High-scoring students were able to clearly show details such as

- either front and back view or exploded view of specific details

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- isometric views.

## Question 4vi.

| Marks | 0  | 1  | 2  | 3  | 4 | Average |
|-------|----|----|----|----|---|---------|
| %     | 14 | 32 | 34 | 15 | 5 | 1.7     |

Students should understand that innovation and creativity is a combination of materials, processes and design. Students need to be aware that just identifying a specific aspect as innovative or creative will not necessarily give them highmarks.

## Question 5

| Marks | 0  | 1  | 2  | Average |
|-------|----|----|----|---------|
| %     | 27 | 36 | 38 | 1.1     |

The following are examples of high-scoring answers.

*Remove all threads after I have sewn my product.*

*I will make sure that the sewing is neat and straight.*

*I will make sure that I sand the timber prior to putting on the varnish.*

*Make sure that all nail holes have been covered.*

*File all welding joints prior to painting.*

*Make sure that joints are neat and 90 degrees.*

## Question 6a.

| Marks | 0  | 1  | Average |
|-------|----|----|---------|
| %     | 50 | 51 | 0.5     |

## Question 6b.

| Marks | 0  | 1  | 2  | 3  | Average |
|-------|----|----|----|----|---------|
| %     | 54 | 15 | 19 | 12 | 0.9     |

Students needed to identify a scale of manufacturing for their product. To gain full marks students needed to explain why their selected manufacturing system is better than others. Mass production does not necessarily create poor quality.

The following is an example of a high-scoring answer.

*Identify: one-off*

*Explain: Each end user has an individual look and need, therefore it will difficult to duplicate. The end user will require specific look even certain aspects maybe similar. Batch or mass production allows for consistency and similar products and this form of production would be too expensive to make for individual looks.*

## Question 7a.

| Marks | 0  | 1  | Average |
|-------|----|----|---------|
| %     | 30 | 70 | 0.7     |

Acceptable answers were: Gantt chart, production, timeline

## Question 7b.

| Marks | 0  | 1  | 2  | 3  | Average |
|-------|----|----|----|----|---------|
| %     | 31 | 18 | 29 | 22 | 1.4     |

Students were able to identify a form of measure to manage their time prior to constructing their product, but had difficulties explaining the process.

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The following is an example of a high-scoring answer.

*Identify: Create a Gant chart*

*Explain: It will allow me to organise all the tasks I have to do in a chronological order. Be aware what has to be ordered and what has to be done for other tasks to be completed. This will make sure if there are any difficulties I can quickly act upon them and make sure that I do not fall behind schedule.*

## Question 8

| Marks | 0  | 1 | 2  | 3  | 4  | 5  | Average |
|-------|----|---|----|----|----|----|---------|
| %     | 17 | 5 | 11 | 24 | 21 | 22 | 2.9     |

Hazards include: burning hands, dust inhalation, sewing fingers, blinding from welding

The process needed to be from the degree of difficulty list used in the design option.

The following is an excerpt from a high-scoring answer.

*Hazard: burning hands*

*Explanation of reason: When you are heating plastic, it can be quite dangerous to touch even though there is no heat on the product. You could easily burn your hands if you touch the plastic prior to letting it cool down.*

*Description of action to reduce risk: When the plastic has created the shape, wait 5 minutes and wear heat gloves to reduce the danger of burning your hands.*

## Question 9

| Marks | 0  | 1  | 2  | 3  | Average |
|-------|----|----|----|----|---------|
| %     | 42 | 23 | 21 | 15 | 1.1     |

Some students had difficulty understanding the role of working drawings. The role of working drawings is clearly stated on page 43 of the *VCE Product Design and Technology Study Design*.

The following is an example of a high-scoring answer.

*The working drawing allows the designer to have a clear idea what has to be cut and what are the correct measurements. The designer can easily outsource some parts and therefore can quickly communicate the correct measurements required. If modifications need to occur the working drawing can easily be altered and therefore no errors will occur if you have someone else cut the material for you.*

## Question 10

| Marks | 0  | 1  | 2  | 3  | Average |
|-------|----|----|----|----|---------|
| %     | 31 | 21 | 25 | 23 | 1.4     |

Students needed to identify an aspect of the product and explain why they needed to show this to the client. There was no need to explain the form of presentation.

The following is an example of a high-scoring answer.

*The umbrella clearly highlights the designer interest in teapots. The shape reflects teapots. This would allow the store holder to stand out from a distance in a crowded market. People would see from above what they sell and they know where they need to go.*