



VCE Product Design and Technology

Written examination – November

Examination specifications

Overall conditions

The examination will be scheduled at a time and date to be set annually by the Victorian Curriculum and Assessment Authority.

There will be 15 minutes reading time and 90 minutes writing time.

VCAA examination rules will apply. Details of these rules are published annually in the *VCE and VCAL Administrative Handbook*.

The examination will be marked by a panel appointed by the VCAA.

The examination will contribute 30 per cent to the Study Score.

Content

The *VCE Product Design and Technology Study Design 2012–2016* is the document used for the development of the examination.

All of the key knowledge and key skills that underpin the outcomes in Units 3 and 4 are examinable. Students will not be required to demonstrate practical skills using tools, equipment and machines that are related to the production of their products. However, their knowledge and understanding of these is examinable. Design brief questions will be based on Category 1 materials **only**. (See page 15 of the *VCE Product Design and Technology Study Design*.)

Format

The examination will be in the form of a question and answer book and will consist of two sections.

Section A (35–55 marks) will consist of a series of short and extended answer questions that may require drawn and/or diagrammatic responses. Section A may contain multiple-choice questions.

Section B (35–55 marks) will consist of short and extended answer questions that may require drawn and/or diagrammatic responses. These questions may be stand-alone questions or multiple-part questions that draw on source material related to a design scenario/design brief that is provided with the examination paper.

Design scenario/design brief material will be provided in an insert. Grid paper and traceable outlines of female/male human figures will **not** be provided in the examination.

The examination will be worth a total of 90 marks.

Approved materials and equipment

From 2013, the following equipment is approved for use in the examination: pens, lead and coloured pencils, water-based pens and markers, highlighters, erasers, sharpeners and rulers. Students do not require any type of shape template in the examination.

Advice

During the 2012–2016 accreditation period for the *VCE Product Design and Technology Study Design*, examinations will be prepared according to the examination specifications above. The examination will assess a representative sample of the key knowledge and key skills in the outcomes of each unit.

The following sample questions, dealing with new content contained in the study design, provide an indication of the type of questions on this content that teachers and students can expect on the Product Design and Technology examination paper.

Answers to multiple-choice questions are provided on page 9. Answers to other questions are not provided.

The following documents should be referred to in relation to the VCE Product Design and Technology examination.

- *VCE Product Design and Technology Study Design 2012–2016*
- *VCAA Bulletin VCE, VCAL and VET*

Sample questions

Question 1

Select the most appropriate answer (A.–D.) for each of the following statements and write your answer in the box.

a. In the product design process, the main purpose of visualisations is to

- A. develop potential ideas to communicate possible concepts.
- B. present detailed drawings from which the client can select.
- C. provide a highly finished representation of a product.
- D. accompany a model to highlight specific details.

b. Qualitative and quantitative methods of evaluating products

- A. guide the selection of resources required to make a product more energy efficient.
- B. are two different ways of gaining specific information about a product.
- C. measure the amount of material used in a product.
- D. assist in benchmarking the pricing of a product.

c. Human-centred design is a product design factor that relates to

- A. a design style related to clothing.
- B. time management and material availability.
- C. the furniture people use in every aspect of work and leisure.
- D. identifying human problems or needs so that quality of life can be improved.

d. Pam purchased a shelving unit for her home office directly from the manufacturer.

The values Pam and the shelving manufacturer are likely to associate with the shelving unit are

- A. emotional connection value for Pam and durability value for the manufacturer.
- B. usability value for Pam and economic value for the manufacturer.
- C. affordability value for Pam and rarity value for the manufacturer.
- D. status value for Pam and identity value for the manufacturer.

Question 2

A local company has developed a reusable coffee cup. The cup is BPA-free and non-toxic. (BPA is a chemical used in the lining of food and beverage packaging.) The cup has good thermal properties and keeps beverages hot for up to 30 minutes longer than disposable cups. Local manufacture is important to the sustainability credentials of the coffee cup.

- a. Identify a possible end user for the reusable coffee cup.

1 mark

- b. Assuming that the designer used the Product design process, outline the steps used during the ‘Investigating and defining’ stage of the development of the reusable coffee cup.

4 marks

- c. Explain why a designer would use a decision matrix to support the development of the reusable coffee cup.

4 marks

d. Below is an incomplete decision matrix for a design option for the reusable coffee cup.

Write the missing design criteria **question** in the decision matrix. (The weighting/ranking columns have been shaded because an answer is not required in these boxes.)

Note: weighting (5 = most important; 1 = least important)

Design criterion/constraint	Weighting (mark out of 5)	Ranking (mark out of 5)	Weighting × Ranking for this design option
• Could the proposed reusable coffee cup be handled safely and hot liquids safely transported in it?	4	4	16
• Would the proposed reusable coffee cup be able to fit into existing coffee machines?	5	5	25
• Could the proposed reusable coffee cup be produced from non-toxic polymers?	3	3	9
• _____ _____ _____ ?			
TOTAL			

1 mark

e. What weighting would you give the criterion question you have written? Explain your answer.

Weighting _____

Explanation _____

4 marks

f. The initial model of the reusable coffee cup was made using rapid 3-D prototyping. Briefly explain the benefits of this technology and why it was used prior to manufacturing the cup.

2 marks

g. Explain why a 'low-volume' manufacturing system would be suitable for the production of the reusable coffee cup.

4 marks

h. The following steps are very important in the development of any product. Choose **two** of the following steps and explain briefly how each of these steps would contribute to the final form of the reusable coffee cup.

- design options
- production plan
- product evaluation

6 marks

6 marks

Question 3

Outline the concept of intellectual property (IP) in product design and explain briefly why IP must be considered when new products are being developed.

3 marks

Answers to multiple-choice questions

Question	Answer
1a.	A
1b.	B
1c.	D
1d.	B