VICTORIAN CURRICULUM AND ASSESSMENT AUTHORITY

Victorian Certificate of Education 2012

SUPERVISOR TO ATTACH PROCESSING LABEL HERE

STUDENT NUMBER

									Letter
Figures									
Words									

PRODUCT DESIGN AND TECHNOLOGY

Written examination

Wednesday 7 November 2012

Reading time: 11.45 am to 12.00 noon (15 minutes)
Writing time: 12.00 noon to 1.30 pm (1 hour 30 minutes)

QUESTION AND ANSWER BOOK

Structure of book

Section	*Number of questions*	*Number of questions to be answered*	*Number of marks*
A	12	12	39
B	10	10	51
			Total 90

- Students are permitted to bring into the examination room: pens, pencils, highlighters, erasers, sharpeners, rulers, coloured pencils, markers and a shape template.
- Students are NOT permitted to bring into the examination room: blank sheets of paper and/or white out liquid/tape.
- No calculator is allowed in this examination.

Materials supplied
- Question and answer book of 17 pages including a detachable Design Brief insert in the centrefold.

Instructions
- Detach the Design Brief insert from the centre of this book during reading time.
- Write your **student number** in the space provided above on this page.
- You may use diagrams, notes or sketches to help explain your answers.
- Use the space provided in this book for your design brief drawings.
- All written responses must be in English.

At the end of the examination
- You may keep the detached Design Brief insert.

Students are NOT permitted to bring mobile phones and/or any other unauthorised electronic devices into the examination room.

SECTION A

Instructions for Section A

Answer **all** questions in the spaces provided.

Question 1

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

a. The Life Cycle Analysis of a product

A. assesses the extraction and processing of material for a product.

B. examines the use, re-use, recycling and final disposal of a product.

C. assesses the environmental cost of the manufacture, transport and distribution of a product.

D. quantifies the environmental impact or cost and the economic cost of a product over the life cycle of that product.

1 mark

b. The 'emotional appeal' of a product refers to the end user experiencing a feeling of wellbeing due to

A. the excellent performance of the product.

B. the initial low cost of purchasing the product.

C. the end user's personal connection with the product.

D. the prolonged life, durability and safety of the product.

1 mark

c. A risk management system that is used to control Occupational Health and Safety hazards must contain

A. a survey of past employees' injuries and workers' compensation claims.

B. a complete assessment of the risks and the control of hazards in the workplace.

C. the identification, assessment and control of hazards and risks, and the checking of risk controls.

D. comprehensive safety research into modern technological developments in manufacturing industries.

1 mark

d. The Evaluation stage of the Product design process must include

A. an interview with the client.

B. an assessment of the product using evaluation criteria.

C. an evaluation of the production planning and the efficiency of production.

D. an evaluation of the production planning and processes as well as an evaluation of the product.

1 mark

CONTINUES OVER PAGE

Use the following information to answer Questions 2–11.

Due to copyright restriction,
this material is not supplied.

Egg Rings – Handy Tools For Perfect Looking Food

Source: http://rs217000.hubpages.com/hub/EggRings

1.

2.

3.

Question 2

The designer identified two parameters within the human-centred (human needs and wants) design factor that were important in the design of the flower-shaped egg rings. These parameters were

- fashion and trends
- emotional sensory appeal.

Select one of these parameters and explain why it is important for the designer to consider this parameter.

parameter _____

explanation _____

_____

_____

_____

2 marks

Question 3

The designer felt that the flower-shaped egg rings were an innovative and creative modification to the traditional round design of egg rings.

Explain why design and innovation are important in the product development process.

3 marks

Question 4

The flower-shaped egg rings were evaluated by a range of end users before going into commercial production.

Identify a method of evaluating products and explain the advantage of this method.

method of evaluating products

advantage

4 marks

Question 5

Explain why a designer undertakes comparative testing of similar commercial products before designing a new version of the product.

3 marks

Question 6

The designer of the flower-shaped egg rings had to take into account international and Australian standards. Identify and describe one purpose of international and Australian standards.

purpose _____

description _____

_____

_____

_____

_____

3 marks

Question 7

Identify **two** of the Five Ps of marketing that relate to the flower-shaped egg rings.

_____

_____

2 marks

Question 8

Select one of the Five Ps of marketing that you identified in Question 7. Explain how this 'P' could influence the commercial success of the flower-shaped egg rings.

_____

_____

_____

_____

_____

3 marks

Question 9

The designer was asked to consider sustainability systems and models when designing the flower-shaped egg rings.

Select one sustainability system or model from the list below and explain the benefits of the system or model.

cradle to cradle concept	Design for the Environment (DfE)
Design for Disassembly (DfD)	Extended Producer Responsibility (EPR)

sustainability system or model _____

explanation _____

_____

_____

_____

_____

3 marks

Question 10

The flower-shaped egg rings may become obsolete in the future.

Identify the type of obsolescence that may apply to the flower-shaped egg rings. Justify your answer.

type of obsolescence _____

justification _____

_____

_____

_____

3 marks

Question 11

The development and production of the flower-shaped egg rings depend on new and emerging technologies, materials and processes.

Identify one emerging technology and explain the use of this technology in Product design or production.

emerging technology _____

explanation _____

_____

_____

3 marks

Question 12

A designer produced a prototype/toile that was the incorrect size, was poorly constructed and did not fulfil the function intended by the client.

EITHER

Select **two** steps from

- the Investigating and defining stage

or

- the Design and development stage.

OR

Select **one** step from each stage.

Explain how the correct application of these steps within the Product design process would have prevented these problems.

Include the name of the stage and steps in your answer.

6 marks

END OF SECTION A

SECTION B

Instructions for Section B

1. Read the Design Brief insert.
2. Fill in the table below after you have decided on the end user, the product and the materials.

End user				
End user's gender (if relevant)				
Product				
Tick (✓) main material(s)	wood/timber		metal	
	textiles		polymers (plastics)	

Question 1

Complete a concept map in the space provided, exploring your ideas for the product.

3 marks

Question 2

Identify one aspect from the Design Brief insert (other than materials testing) that you would research and explain how this research will influence your design. Relate the aspect to your selected end user.

4 marks

Question 3

Name a test that could be used to find out more about the characteristics and properties of the material selected for the product, and explain why this test is relevant to your product's development. The test will occur **prior** to the making of the product.

3 marks

Question 4

The festival organisers (the client) have difficulty visualising the finished product.

Name and describe one strategy that you would use to solve this communication problem.

strategy

description

3 marks

CONTINUES OVER PAGE

Question 5

Draw and annotate a design option for the product that you have selected on page 9.

Draw your design option on this page.

Draw detailed views of three processes from your design option in the boxes provided. Include one process from the **degree of difficulty list** in the Design Brief insert.

Assessment criteria		
i.	function/suitability of the design option for intended use	3 marks
ii.	drawing, in the boxes, of processes, including one from the **degree of difficulty list**	3 marks
iii.	use of visual, tactile and aesthetic Product design factors (parameters) in the design option	3 marks
iv.	annotations, on the design option, that indicate how the requirements of the design brief have been met	3 marks
v.	clarity and detail of drawing in the design option	2 marks
vi.	innovation and creativity in the design option	4 marks

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Question 6

a. Identify one Product design factor for your specific end user (Techno **or** Muso **or** Indie).

1 mark

b. Change this Product design factor into an evaluation criterion.

1 mark

c. What priority would you give this criterion: high, medium or low?

Explain why you would give this criterion this level of priority in the design option decision matrix.

2 marks

d. Explain why you need to use a decision matrix when deciding on the best design option.

3 marks

Question 7

Identify one component of the production plan for your design option and explain the role of this component in the production plan.

3 marks

Question 8

Identify the process from the **degree of difficulty list** that you have included in your design and drawn in the box on page 13.

a. Identify the risk assessment associated with the process that you have selected from the **degree of difficulty list**.

1 mark

b. Which **two** procedures would you put in place to reduce this risk?

2 marks

Question 9

The product needs to be finished to a high standard.

a. Identify one quality measure and explain how this quality measure contributes to the quality of the product.

3 marks

b. Name one care requirement that is intended to prolong the product's life and maintain its appearance.

1 mark

Question 10

You will need to produce a presentation outlining the features of the product for the end user.

a. What form of presentation would suit your specific end user?

_____

1 mark

b. Why would you choose this type of presentation for your end user?

_____

_____

_____

2 marks

END OF QUESTION AND ANSWER BOOK

Please remove from the centre of this book during reading time.

D E S I G N B R I E F

The Fringe Festival

Every year, during the Fringe Festival, performers take to stages all over the city to present shows that appeal to every taste. From big names in the world of entertainment to unknown artists looking to build their careers, the Fringe Festival caters for a wide range of tastes by including theatre, comedy, dance, physical theatre, musicals and music, exhibitions and events.

The Fringe Festival presents 'out there', alternative events. The performances take place in tiny spaces and large spaces, in grand theatres and local halls, in tents and, of course, outdoors.

UNUSUAL! CREATIVE! HUMOROUS! SERIOUS! CHALLENGING!
CUTTING-EDGE ENTERTAINMENT!

THEME

The theme for this year's Fringe Festival is

I am an Individual within a group!

INVITATION TO ALL DESIGNERS

The organisers of the Fringe Festival would like to invite designers and members of the general public to explore the idea of products for target groups (end users) while finding a solution to a design problem.

- The design should fit one end user's characteristics so that the design reflects the end user's values.
- The products will be shown at an exhibition or worn during the festival.
- The festival will provide a chance for new designers to show their talent.
- The products will be sold in several large retail stores.
- All products will need to be finished to a very high standard.

TURN OVER

SELECT AN END USER
THEN SELECT A PRODUCT

END USER CHARACTERISTICS

Techno	Muso	Indie
• obsessed with the latest technology • likes the look of clean lines • likes things to be futuristic	• loves rock'n'roll music • collects records, objects and clothing related to rock music • loves products that have a connection to music	• loves the individual look • likes things to be out of the ordinary • loves vintage and retro objects and clothes • likes things to have a pre-loved look

PRODUCTS

Storage unit

- maximum 900 mm high so that things can be placed on top
- has to have at least one drawer
- should have a secret compartment for hiding something, such as jewellery or money

Formal clothing – evening wear (gender needs to be specified)

A coordinated outfit consisting of at least **two** pieces of clothing is required.

- jacket or coat
- top (highlighting the neckline and sleeve shapes)
- skirt (just above the knee or longer) or trousers (classical length)

Seating

- minimum 400 mm high
- capable of seating three or more people
- should be easy to clean

Gates for a grand/impressive entrance

- 2400 mm high × 1800 mm wide
- water resistant
- lockable

Distinctive outfit for staff who will be selling various kinds of merchandise at festival venues

- unisex
- at least **two** pieces of clothing
- able to be washed frequently

Your design should include at least **three** processes with a degree of difficulty; one of these processes **must** be from the **degree of difficulty list** below.

Degree of difficulty list			
Metal	**Polymers (plastics)**	**Textiles**	**Wood/Timber**
• bronze brazing • cold bending • folding • forging • riveting • rolling • silver soldering • turning (using an engineer's lathe) • welding	• blow moulding • casting • injection moulding • riveting • turning (using an engineer's lathe) • vacuum forming	• boning • buttonhole making • collar making • cuff making • gathering • overlocking • piping • pleating • pocket making • rolled hemming • sleeve insertion • surface decoration • tucking • zip insertion	• biscuit jointing • crossed housing jointing • domino jointing • dovetail jointing • housing jointing • mortise and tenon jointing • rebate/shoulder butt jointing • routing (decorative edge) • screwing and gluing • spline and mitre jointing • veneering • wood turning (using a wood lathe)

END OF DESIGN BRIEF INSERT