Government of **Western Australia**
School Curriculum and Standards Authority

Western Australian Certificate of Education
ATAR course examination, 2016

Question/Answer booklet

MATERIALS DESIGN AND TECHNOLOGY

Sections One and Two

Please place your student identification label in this box

Student number: In figures | | | | | | | | |

In words _____

_____

Time allowed for this paper
Reading time before commencing work: ten minutes
Working time: two and a half hours

Time recommended for these sections
Suggested working time for these sections: sixty minutes

Materials required/recommended for this paper
To be provided by the supervisor
This Question/Answer booklet

Number of additional answer booklets used (if applicable): ☐

To be provided by the candidate
Standard items: pens (blue/black preferred), pencils (including coloured), sharpener, correction fluid/tape, eraser, ruler, highlighters

Special items: non-programmable calculators approved for use in this examination

Important note to candidates
No other items may be taken into the examination room. It is **your** responsibility to ensure that you do not have any unauthorised material. If you have any unauthorised material with you, hand it to the supervisor **before** reading any further.

Ref: 16-045

2017/3977
Web version of 2016/63150

Structure of the examination

The Materials Design and Technology ATAR course examination consists of a written component and a practical (portfolio) component.

Structure of this paper

Section	Number of questions available	Number of questions to be answered	Suggested working time (minutes)	Marks available	Percentage of written examination
Section One Short answer	3	3	20	35	15
Section Two Extended answer	4	4	40	37	25
Section Three Candidates to choose **one** of the following contexts: Wood Metal Textiles	 5 5 5	 5 5 5	90	 67 67 67	60
				Total	100

Instructions to candidates

1. The rules for the conduct of the Western Australian Certificate of Education ATAR course examinations are detailed in the *Year 12 Information Handbook 2016*. Sitting this examination implies that you agree to abide by these rules.

2. Write your answers in this Question/Answer booklet.

3. Answer the questions according to the following instructions.

   Sections One and Two: Answer all questions.

4. You must be careful to confine your answers to the specific questions asked and to follow any instructions that are specific to a particular question.

5. Additional working space pages at the end of this Question/Answer booklet are for planning or continuing an answer. If you use these pages, indicate at the original answer, the page number it is planned/continued on and write the question number being planned/continued on the additional working space page.

See next page

Section One: Short answer **15% (35 Marks)**

This section has **three (3)** questions. Answer **all** questions. Write your answers in the spaces provided.

Additional working space pages at the end of this Question/Answer booklet are for planning or continuing an answer. If you use these pages, indicate at the original answer, the page number it is planned/continued on and write the question number being planned/continued on the additional working space page.

Suggested working time: 20 minutes.

Question 1 **(15 marks)**

Define each of the following stages of the design process and give **two** examples of what would need to be provided in a portfolio at each of the stages.

Design proposal/Statement of intent: _____

Research: _____

Development of ideas and concepts: _____

Question 1 (continued)

Production plan: _____

_____

_____

_____

_____

Final evaluation: _____

_____

_____

_____

_____

Question 2 **(8 marks)**

Finishes are used for a variety of reasons, one of which is protecting materials from the elements.

(a) Identify **one** finish that protects a material from the elements. Describe how this finish is applied and how it serves to protect the given material. (3 marks)

(b) Describe an instance in which the finish identified in part (a) might **not** be effective. (2 marks)

(c) Describe the possible environmental impacts that may be caused during manufacturing, applying and disposing of the finish. (3 marks)

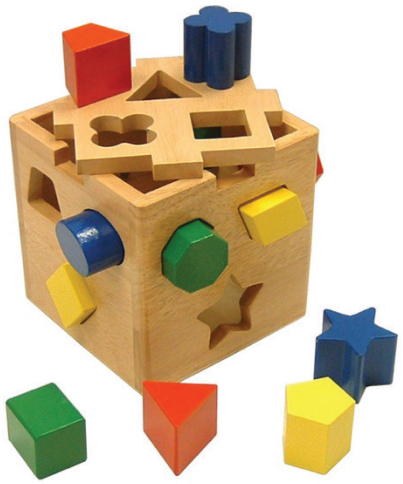
See next page

Question 3 **(12 marks)**

Using **three** design fundamentals, analyse **each** of the products shown below.

For copyright reasons this image cannot be reproduced in the online version of this document, but may be viewed at www.amazon.com/Dyson-DC34-Handheld/dp/B006WS39NE (top image)

Product 1: Handheld vacuum cleaner



Product 2: Shape sorter toy

Product 1: _____

Product 2: _____

End of Section One

See next page

Section Two: Extended answer **25% (37 Marks)**

This section contains **four (4)** questions. Answer **all** questions. Write your answers in the spaces provided.

Additional working space pages at the end of this Question/Answer booklet are for planning or continuing an answer. If you use these pages, indicate at the original answer, the page number it is planned/continued on and write the question number being planned/continued on the additional working space page.

Suggested working time: 40 minutes.

Question 4 **(6 marks)**

The blender pictured above is designed to make smoothies and juices. Since its release, many other similar blenders have been developed. Discuss the relationship between product innovation, lifestyle choices and consumer demand in the development and sale of this type of product.

See next page

See next page

Question 5 **(12 marks)**

The Whale Tail in Esperance was unveiled in 2014 and was designed and created by artists Jason Wooldridge and Cindy Poole.

With reference to the image, identify and outline how **three** principles and **three** elements of design have been used successfully in this sculpture.

See next page

See next page

Question 6 **(6 marks)**

Explain what a prototype is and why it is important to make one before producing a product. State **four** examples of how a designer could use a prototype to check the effectiveness of the design.

See next page

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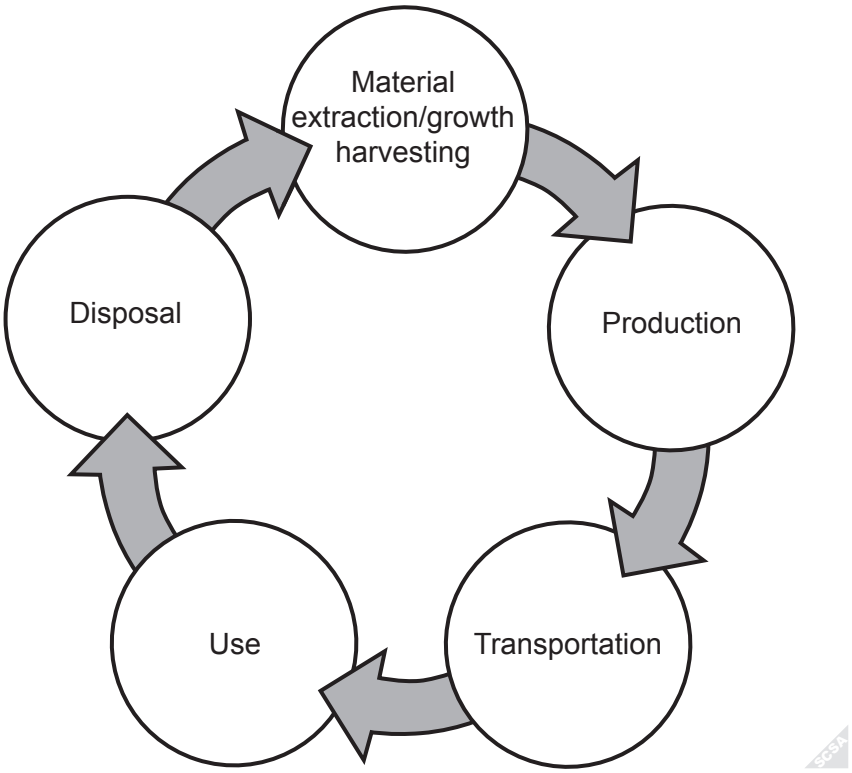
See next page

Question 7 **(13 marks)**

The diagram below shows the main stages of a product life cycle assessment tool or plan.



(a) Define what a product life cycle assessment tool or plan is and explain how it can benefit a designer. (3 marks)

(b) For each stage, give **two** examples of considerations that a designer may take into account when designing a new product. (10 marks)

Material extraction/growth harvesting

One: _____

Two: _____

See next page

Production

One: _____

_____

Two: _____

_____

Transportation

One: _____

_____

Two: _____

_____

Use

One: _____

_____

Two: _____

_____

Disposal

One: _____

_____

Two: _____

_____

End of Section Two

Additional working space

Question number: _____

Additional working space

Question number: _____

Additional working space

Question number: _____

Additional working space

Question number: _____

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