Western Australian Certificate of Education
ATAR course examination, 2016
Question/Answer booklet

MATERIALS
DESIGN AND TECHNOLOGY
Sections One and Two

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

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.
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

<table>
<thead>
<tr>
<th>Section</th>
<th>Number of questions available</th>
<th>Number of questions to be answered</th>
<th>Suggested working time (minutes)</th>
<th>Marks available</th>
<th>Percentage of written examination</th>
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</thead>
<tbody>
<tr>
<td>Section One</td>
<td></td>
<td></td>
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<tr>
<td>Short answer</td>
<td>3</td>
<td>3</td>
<td>20</td>
<td>35</td>
<td>15</td>
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<tr>
<td>Section Two</td>
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<tr>
<td>Extended answer</td>
<td>4</td>
<td>4</td>
<td>40</td>
<td>37</td>
<td>25</td>
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<tr>
<td>Section Three</td>
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<td>Candidates to choose one of the following contexts:</td>
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<tr>
<td>Wood</td>
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<td>5</td>
<td>90</td>
<td>67</td>
<td>60</td>
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<tr>
<td>Metal</td>
<td>5</td>
<td>5</td>
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<td>Textiles</td>
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<td><strong>Total</strong></td>
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<td><strong>5</strong></td>
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<td><strong>67</strong></td>
<td><strong>60</strong></td>
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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.
Section One: Short answer

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: __________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
MATERIALS DESIGN AND TECHNOLOGY

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)
Question 3  (12 marks)

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

Product 1: Handheld vacuum cleaner

Product 2: Shape sorter toy

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 2: 


End of Section One
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.
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.
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.
This page has been left blank intentionally
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: ________________

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