ATAR course examination, 2018
Question/Answer booklet

MATERIALS DESIGN AND TECHNOLOGY
Sections One and Two

Student number: In figures

In words

Please place your student identification label in this box

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

Time suggested 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>
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<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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<td>Section One</td>
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<td>Short answer</td>
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<td>Section Two</td>
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<td>Candidates to choose one of the following contexts:</td>
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<tr>
<td>Wood</td>
<td>6</td>
<td>6</td>
<td>90</td>
<td>75</td>
<td>60</td>
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<tr>
<td>Metal</td>
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<tr>
<td>Textiles</td>
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</table>

Total 100

Instructions to candidates

1. The rules for the conduct of the Western Australian external examinations are detailed in the Year 12 Information Handbook 2018. 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. Supplementary pages for planning/continuing your answers to questions are provided at the end of this Question/Answer booklet. If you use these pages to continue an answer, indicate at the original answer where the answer is continued, i.e. give the page number.
Section One: Short answer 15% (30 Marks)

This section has three questions. Answer all questions. Write your answers in the spaces provided.

Supplementary pages for planning/continuing your answers to questions are provided at the end of this Question/Answer booklet. If you use these pages to continue an answer, indicate at the original answer where the answer is continued, i.e. give the page number.

Suggested working time: 20 minutes.

Question 1 (8 marks)

Working drawings and specification sheets are an integral part of the production planning process.

(a) List three essential pieces of information that must be included on a working drawing or specification sheet. (3 marks)

(b) Identify three consequences of an error in a working drawing or specification sheet. (3 marks)

(c) Describe how a working drawing or specification sheet contributes to materials and costing predictions. (2 marks)
Question 2  (10 marks)

Define the following design fundamentals and describe how you applied each one in the design of one of your projects this year.

Aesthetics: __________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

Function: __________________________________________________________

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____________________________________________________________________

Sustainability: ______________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

Safety: _____________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

Cost: ________________________________________________________________

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Question 3  (12 marks)

Using annotations, identify and evaluate the successful application of three ergonomic and three anthropometric features to this mountain bike on the image below.

End of Section One
This page has been left blank intentionally
Section Two: Extended answer  

This section has four questions. Answer all questions. Write your answers in the spaces provided.

Supplementary pages for planning/continuing your answers to questions are provided at the end of this Question/Answer booklet. If you use these pages to continue an answer, indicate at the original answer where the answer is continued, i.e. give the page number.

Suggested working time: 40 minutes.

Question 4  (7 marks)

(a) Using an example, explain the difference between a hazard and a risk.  (2 marks)

(b) Identify two pieces of information that can be found on a material safety data sheet and explain why material safety data is important.  (5 marks)
A designer’s ability to predict evolving and changing consumer demands will depend on their ability to draw on, analyse and interpret information from a large and ever-increasing range of sources.

(a) In light of this statement, explain how the designer could have collected information to identify and predict the needs and wants of consumers with regard to the hair dryer pictured above. (4 marks)

For copyright reasons this image cannot be reproduced in the online version of this document, but may be viewed at https://gizmodo.com/dyson-redesigned-the-hair-dryer-so-its-easier-and-safer-1770811429?IR=T
(b) Outline three wants and/or needs that a consumer might consider when selecting a hair dryer. (6 marks)

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Question 6 (11 marks)

Car stereos have evolved rapidly, particularly over the past 20 years.

1999

- digital volume buttons
- separate power button
- green and orange display options
- treble/bass adjusters
- presets for up to 36 AM and FM stations
- Dolby enhanced sound
- 35 Watt amplifiers x 4
- CD player
- small removable left panel for storage in keyring panel pouch (123 section).

2017

- touch screen
- compatible with most smart phones
- bluetooth capability
- map navigation
- voice recognition
- call/voice text/voicemail/read out loud functions
- compatibility with music apps and stored music
- ability to add podcasts, audiobooks, news or sports radio and many other apps
- must be connected to smart phone via cable or via bluetooth.

For copyright reasons this image cannot be reproduced in the online version of this document, but may be viewed at http://oyvind.servehttp.com/philips1.htm

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(a) Analyse the two car stereos in relation to the following influences on design, using the specifications provided to support your analysis. (9 marks)

Innovation: 

Lifestyle: 

Consumer demand: 

(b) Describe the relationship between innovation, lifestyle and consumer demand. (2 marks)

See next page
Question 7  (10 marks)

Outline five effects of automation on production for companies and their employees.

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End of Section Two
Supplementary page

Question number: ________________
Supplementary page

Question number: ________________

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ACKNOWLEDGEMENTS


Question 6  Image 1

Image 2

Image 3

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