Western Australian Certificate of Education Examination, 2015

Question/Answer Booklet

MATERIALS
DESIGN AND TECHNOLOGY

Stage 3
Sections One and Two

Student Number:  
In figures


In words

Time allowed for this paper
Reading time before commencing work:  ten minutes
Working time for paper:  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
Section Three 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 the WACE examinations

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 notes or other items of a non-personal nature in the examination room. If you have any unauthorised material with you, hand it to the supervisor before reading any further.
Structure of the examination

The WACE Materials Design and Technology Stage 3 examination consists of a written component worth 50 per cent of the total examination score and a practical (portfolio) component worth 50 per cent of the total examination score.

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 total exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section One: Short answer</td>
<td>3</td>
<td>3</td>
<td>20</td>
<td>24</td>
<td>15</td>
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<tr>
<td>Section Two: Extended answer</td>
<td>3</td>
<td>3</td>
<td>40</td>
<td>22</td>
<td>25</td>
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<tr>
<td>Section Three:</td>
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<td>Candidates to choose <strong>one</strong></td>
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<td>of the following contexts:</td>
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<td>Wood</td>
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<td>90</td>
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<td>60</td>
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<tr>
<td>Metal</td>
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<td>Textiles</td>
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<td><strong>Total</strong></td>
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</table>

Instructions to candidates

1. The rules for the conduct of Western Australian external examinations are detailed in the *Year 12 Information Handbook 2015*. Sitting this examination implies that you agree to abide by these rules.

2. Answer the questions according to the following instructions.

   Sections One and Two: Answer all questions. Write your answers in this Question/Answer Booklet.

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

4. Spare pages are included at the end of this booklet. They can be used for planning your responses and/or as additional space if required to continue an answer.
   - Planning: If you use the spare pages for planning, indicate this clearly at the top of the page.
   - Continuing an answer: If you need to use the space to continue an answer, indicate in the original answer space where the answer is continued, i.e. give the page number. Fill in the number of the question that you are continuing to answer at the top of the page.
Section One: Short answer 15% (24 Marks)

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

Spare pages are included at the end of this booklet. They can be used for planning your responses and/or as additional space if required to continue an answer.

- Planning: If you use the spare pages for planning, indicate this clearly at the top of the page.
- Continuing an answer: If you need to use the space to continue an answer, indicate in the original answer space where the answer is continued, i.e. give the page number. Fill in the number of the question that you are continuing to answer at the top of the page.

Suggested working time: 20 minutes.

Question 1 (9 marks)

Below there are three safety signs that can be found in a workshop.

Identify one element and one principle of design that has been used in the design of each safety sign. Explain how the elements and principles are used to convey the message.

<table>
<thead>
<tr>
<th>Element</th>
<th>Principle</th>
<th>Explanation</th>
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</table>
Question 2

During the design of the mobile phone shown in Figure 1, the designer considered four different materials for the outer casing. To ensure that the most suitable material was selected, each was tested for absorbency, durability, hardness and stiffness.

The table below shows the results for each of the materials. Analyse the table and explain, with reference to the properties, which material would be the most suitable for the mobile phone.

![Figure 1](http://cdn0.mos.techradar.futurecdn.net/art/mobile_phones/Huawei/AscendMate/Review/huawei-mate5-420-90.jpg)

![Table 1](http://cdn0.mos.techradar.futurecdn.net/art/mobile_phones/Huawei/AscendMate/Review/huawei-mate5-420-90.jpg)
Question 3

Answer the following parts of this question with reference to a project that you have manufactured this year.

(a) Identify **four** environmental impacts your project may have had on the environment. (4 marks)

(b) How could you reduce the impacts referred to in Question 3(a) if you were to make your project again? (3 marks)
Question 3 (continued)

(c) Identify an emerging material that could be used to make your project referred to in Question 3(a) and discuss the properties of the material that make it appropriate for this project. (4 marks)

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End of Section One
Section Two: Extended answer

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

Spare pages are included at the end of this booklet. They can be used for planning your responses and/or as additional space if required to continue an answer.

- Planning: If you use the spare pages for planning, indicate this clearly at the top of the page.
- Continuing an answer: If you need to use the space to continue an answer, indicate in the original answer space where the answer is continued, i.e. give the page number. Fill in the number of the question that you are continuing to answer at the top of the page.

Suggested working time: 40 minutes.

Question 4

(10 marks)

Compare the portable speakers below, referring to five relevant design fundamentals.
Question 4 (continued)
Question 5 (6 marks)

Examine the products below and discuss the social and cultural factors that have influenced their development from 1987 to 2014.

For copyright reasons this image cannot be reproduced in the online version of this document, but may be viewed at www.oldcomputers.net/appleii.html

Product A

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Product B
Question 6 (6 marks)

For a product of your choice, describe how the application of new technology has improved its manufacture, function and usability.

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End of Section Two
Additional working space

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