



ATAR course examination, 2024

Question/Answer booklet

MATERIALS DESIGN AND TECHNOLOGY

Sections One and Two

Please place your student identification label in this box

WA student number: In figures

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In words

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

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: up to three calculators, which do not have the capacity to create or store programmes or text, are permitted in this ATAR course 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

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	32	15
Section Two Extended answer	4	4	40	35	25
Section Three Candidates to choose one of the following contexts: Metal Textiles Wood	6	6	90	74	60
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 2024: Part II Examinations*. Sitting this examination implies that you agree to abide by these rules.
2. Write your answers in this Question/Answer booklet preferably using a blue/black pen. Do not use erasable or gel pens.
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% (32 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)**

- (a) Identify **three** techniques used to research the demands of a target market. (3 marks)

One: _____

Two: _____

Three: _____

- (b) Define the term 'niche market' and state an example of a niche market. (2 marks)

- (c) List **three** benefits of a designer understanding the demands of their target market. (3 marks)

One: _____

Two: _____

Three: _____

See next page

Question 2

(12 marks)

During the design cycle, designers create prototypes or models of their designs.

- (a) Outline **three** reasons for making a prototype or model during the design process.

(6 marks)

One: _____

Two: _____

Three: _____

- (b) Outline the next step for the designer after making a prototype or model.

(2 marks)

- (c) Other than making a prototype or model, outline **two** other presentation techniques used to communicate design ideas to clients. (4 marks)

One: _____

Two: _____

Question 3

(12 marks)

- (a) Identify **three** responsibilities of workshop/studio users in relation to occupational safety and health. (3 marks)

One: _____

Two: _____

Three: _____

- (b) Describe why there are legal implications associated with designing and producing material products for the consumer market. (3 marks)

- (c) Outline **three** proactive measures that can be used to minimise the risk of injury or illness in a workshop/studio. (6 marks)

One: _____

Two: _____

Three: _____

End of Section One

See next page

Section Two: Extended answer

25% (35 Marks)

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

(8 marks)

The Mandurah Giants are a popular tourist attraction designed by Thomas Dambo. Outline how the artist has used **two** elements and **two** principles of design to connect the Giant pictured below with the natural outdoor setting.



Elements

One: _____

Two: _____

Principles

One: _____

Two: _____

See next page

Question 5

(11 marks)

- (a) Identify **three** components of a production plan. (3 marks)

One: _____

Two: _____

Three: _____

- (b) Outline **two** benefits of recording into the production plan any changes and modifications made during manufacture. (4 marks)

One: _____

Two: _____

- (c) Explain **one** factor that could account for the difference between an estimated and an actual costing of a product. (4 marks)

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See next page

Question 6

(10 marks)

Using **five** design fundamentals, compare the design of the can openers below.



1960s design



21st century design

One: _____

Two: _____

Three: _____

Four: _____

Five: _____

Question 7

(6 marks)

Australian manufacturers are using green design principles to develop more sustainable practices and products.



Discuss the importance of the efficient use of energy and materials in the design process.

ACKNOWLEDGEMENTS

- Question 6** Evan-Amos. (2010). *Kitchen-Classic-Can-Opener* [Image]. Retrieved May, 2024, from <https://commons.wikimedia.org/wiki/File:Kitchen-Classic-Can-Opener.jpg>
- Owen-Wahl, R. (2016). [Image of white plastic can opener]. Retrieved May, 2024, from <https://pixabay.com/photos/accessory-aluminum-appliance-1238757/>
- Question 7** Shopplaywood. (2019). *Vector Recycling Arrows with the Earth Planet* [Graphic]. Retrieved May, 2024, from <https://www.istockphoto.com/vector/vector-recycling-arrows-with-the-earth-planet-gm1177403911-328684319?phrase=earth+and+recycling+symbol&searchscope=image%2Cfilm>

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