



Western Australian Certificate of Education Examination, 2013

Question/Answer Booklet

FOOD SCIENCE AND TECHNOLOGY

Stage 3

Please place your student identification label in this box

Student Number: In figures

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In words

Time allowed for this paper

Reading time before commencing work: ten minutes

Working time for paper: three hours

Materials required/recommended for this paper

To be provided by the supervisor

This Question/Answer Booklet

Multiple-choice Answer Sheet

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: nil

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 this paper

Section	Number of questions available	Number of questions to be answered	Suggested working time (minutes)	Marks available	Percentage of exam
Section One: Multiple-choice	15	15	25	15	15
Section Two: Short answer	8	8	70	76	40
Section Three: Extended answer	1	1	40	25	20
Section Four: Extended answer (Context-specific)	6	1	45	20	25
Total					100

Instructions to candidates

- The rules for the conduct of Western Australian external examinations are detailed in the *Year 12 Information Handbook 2013*. Sitting this examination implies that you agree to abide by these rules.
- Answer the questions according to the following instructions.

Section One: Answer **all** questions on the separate Multiple-choice Answer Sheet provided. For each question, shade the box to indicate your answer. Use only a blue or black pen to shade the boxes. If you make a mistake, place a cross through that square, then shade your new answer. Do not erase or use correction fluid/tape. Marks will not be deducted for incorrect answers. No marks will be given if more than one answer is completed for any question.

Sections Two, Three and Four: Write your answers in this Question/Answer Booklet.

- 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.
- 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.

See next page

Section One: Multiple-choice**15% (15 Marks)**

This section has **15** questions. Answer **all** questions on the separate Multiple-choice Answer Sheet provided. For each question, shade the box to indicate your answer. Use only a blue or black pen to shade the boxes. If you make a mistake, place a cross through that square, then shade your new answer. Do not erase or use correction fluid/tape. Marks will not be deducted for incorrect answers. No marks will be given if more than one answer is completed for any question.

Suggested working time: 25 minutes.

1. Food models are used to
 - (a) inform food intake decisions.
 - (b) regulate food intake decisions.
 - (c) specify food intake decisions.
 - (d) report food intake decisions.

2. Global food requirements are driven by
 - (a) food prices and nutrition.
 - (b) societal issues and food prices.
 - (c) increases in population.
 - (d) societal trends and nutrition.

3. Consumer rights that influence legal and regulatory processes governing the food industry include access to
 - (a) a safe food supply and information about food products.
 - (b) an economical food supply and a wide range of food products.
 - (c) a wide range of food products and a safe food supply.
 - (d) information about food products and an economical food supply.

4. Food products produced using innovative food processes and systems
 - (a) are healthier because they cost more.
 - (b) improve health and wellbeing.
 - (c) prevent chronic disease.
 - (d) increase the range of foods available.

5. In order to manage tasks effectively, teams rely on
 - (a) innovative and technological skills.
 - (b) individual and innovative skills.
 - (c) technological and group skills.
 - (d) individual and group skills.

See next page

6. The collection of data by observing consumer behaviour is an aspect of
- (a) quantitative research.
 - (b) mathematical research.
 - (c) market research.
 - (d) scientific research.
7. The solidity of a crystallised food product such as toffee is influenced by the
- (a) length of time the sugar solution is exposed to heat.
 - (b) reduction in the sugar content of the solution.
 - (c) presence of acids in the sugar solution.
 - (d) exposure of the sugar solution to low temperatures.
8. The influences of race and gender on health are known as
- (a) historical factors.
 - (b) genetic factors.
 - (c) environmental factors.
 - (d) medical factors.
9. Specific food products are developed for a
- (a) consumer market.
 - (b) population market.
 - (c) commercial market.
 - (d) target market.
10. The development and production of food products can be managed by using the
- (a) analytical process.
 - (b) investigative process.
 - (c) technology process.
 - (d) technical process.
11. Competition and innovation in the marketplace result in changes to
- (a) sustainability and food equity.
 - (b) consumer and enterprise relationships.
 - (c) product life span and variety.
 - (d) food access and nutritional health.

12. Consumer access to food resources affects food
- (a) processing techniques.
 - (b) storage systems.
 - (c) purchasing power.
 - (d) consumption patterns.
13. Information about the effect of food processing on the environment enables consumers to make informed
- (a) ethical decisions about food.
 - (b) health decisions about food.
 - (c) economic decisions about food.
 - (d) innovative decisions about food.
14. Convenience, access to information and an increase in appeal to consumers are functions of food
- (a) distribution.
 - (b) processing.
 - (c) packaging.
 - (d) marketing.
15. Opportunities to expand markets in the food industry are increased by the use of
- (a) enterprising capabilities.
 - (b) consumer practices.
 - (c) mise-en-place skills.
 - (d) nutritional information.

End of Section One

See next page

Section Two: Short answer**40% (76 Marks)**

This section has **eight (8)** 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: 70 minutes.

Question 16**(9 marks)**

Food equity is a major global issue. Developing countries are most affected, sometimes with devastating consequences. Australia also faces challenges in providing adequate nutrition for its entire population.

- (a) Define the term 'food equity'. (1 mark)

Question 19

(14 marks)

Jake, a 17-year-old, has used a food diary to record his food intake for one day. He wants to try out for the school swimming team. The results of his fitness tests show that he needs to reduce his body fat measurement. He does a light training session three times a week and gets sufficient sleep each night. Morning tea is prepared at home and stored in his locker and lunch is purchased from the school canteen.

Examine the food diary below.

Time	Food and drink consumed
7.30 am	Breakfast: 3 cups Nutrigrain 1 cup full cream milk 2 thick slices white bread, toasted 3 teaspoons butter 250 ml orange fruit juice drink
10.30 am	Morning tea: Sandwich 2 thick slices white bread 3 teaspoons butter 2 slices Italian salami 4 slices tomato 2 tablespoons mayonnaise 600 ml chocolate milk 1 apple
1.00 pm	Lunch: 2 large sausage rolls 2 tablespoons tomato sauce 1 orange
3.15 pm	Swimming training: 600 ml sports drink
4.30 pm	Afternoon tea: 1 takeaway beefburger 1 large chocolate thick shake
7.30 pm	Dinner: 2 cups commercial pre-prepared beef stir fry with noodles 200 mg strawberry yoghurt
9.00 pm	Supper: 1 cup milk 3 tablespoons Milo 2 teaspoons sugar

See next page

Question 19 (continued)

- (b) Explain why a revised version of the Australian Dietary Guidelines was released in 2013. (2 marks)

Question 20

(9 marks)

Identify **three** skills that you have used when working collaboratively to prepare and present food. Describe how each skill contributed to the effectiveness of the work environment.

Skills	Contributes to the work environment
One: _____ _____ _____ _____ _____	_____ _____ _____ _____ _____
Two: _____ _____ _____ _____ _____	_____ _____ _____ _____ _____
Three: _____ _____ _____ _____ _____	_____ _____ _____ _____ _____

Question 23

(6 marks)

Bananas are Australia's most popular fruit. Queensland produces 90% of the bananas grown in Australia and 70% of these are sold through the two major supermarket chains. It is estimated that up to 30% of the bananas produced are discarded before leaving the farms because they fail to meet the product specifications set by the retailers.

- (a) Explain **one** reason why the influence of consumers causes such a large proportion of the banana crop to be discarded. (2 marks)

- (b) Discuss **two** reasons why the practice of discarding bananas affects profitability of the industry. (4 marks)

End of Section Two

See next page

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See next page

Section Three: Extended answer

20% (25 Marks)

This section contains **one (1) compulsory** question. Write your answer 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 24**(25 marks)**

Most foods have been processed in some way. The environmental conditions to which foods are exposed and the wide range of commercial food processing systems used influence the properties of foods that are produced.

- (a) Explain the term 'commercial food processing system'. (2 marks)

- (b) Identify **four** processing techniques used in commercial food processing systems to alter the properties of food. (4 marks)

See next page

Section Four: Extended answer (Context-specific)**25% (20 Marks)**

This section is divided into **three (3)** contexts.

There are **two (2)** questions for each context. Answer **one (1)** question only.

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- 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: 45 minutes.

Tick **one** of the boxes in each of the second and third columns to indicate your choice of context and question.

Context	✓	Question ✓	Pages
Hospitality	<input type="checkbox"/>	Q25 <input type="checkbox"/> or Q26 <input type="checkbox"/>	22–25
Nutrition and health promotion	<input type="checkbox"/>	Q27 <input type="checkbox"/> or Q28 <input type="checkbox"/>	26–30
Product development	<input type="checkbox"/>	Q29 <input type="checkbox"/> or Q30 <input type="checkbox"/>	31–34

Now turn to the relevant pages and answer the question for the context you have selected.

See next page

Question 26

(20 marks)

Market research is undertaken by all sectors of the hospitality industry to determine consumer purchasing patterns and their impact on profitability.

- (a) Explain **two** reasons why coffee shops offer a range of milk varieties to consumers. (4 marks)

- (b) Coffee shop patrons can order skinny lattes, which are made using fat-reduced milk. Identify and describe **one** technological development that has enabled the production of fat-reduced milk. (4 marks)

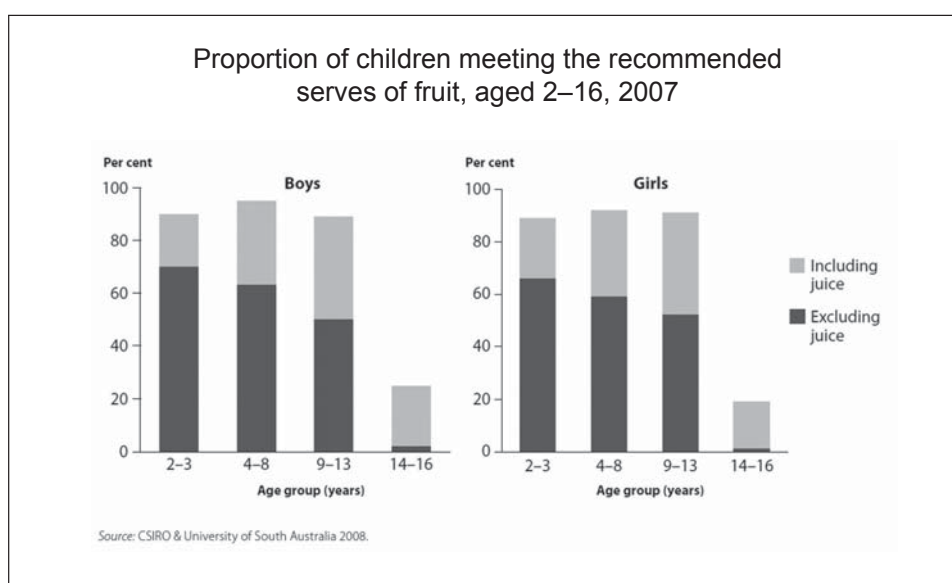
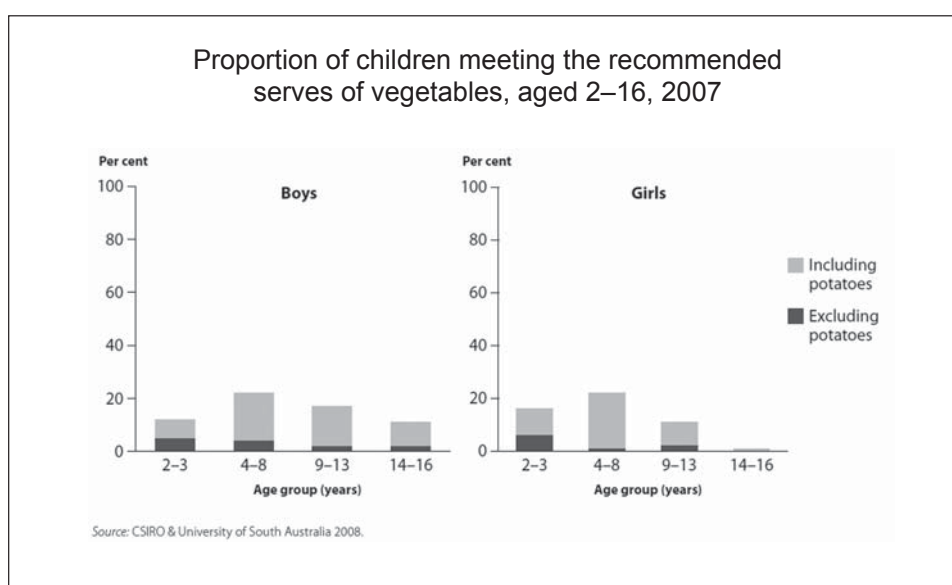
Context: Nutrition and health promotion

Answer **one (1)** question only, either Question 27 **or** Question 28.

Suggested working time: 45 minutes.

Question 27**(20 marks)**

There is increasing concern about the levels of consumption of fruit and vegetables by Australians. National data (2007) shows that only six per cent of people consume sufficient fruit and vegetables on a regular basis. The information provided in the graphs below suggests that young people in particular may be at risk.



See next page

- (a) Using the information from the graphs on page 26, describe the group that consumes the most vegetables. Propose **one** reason for this. (4 marks)

- (b) Explain **three** impacts on health associated with the consumption of fruit by children aged 14–16, as shown in the graph. (6 marks)

Question 28

(20 marks)

- (a) List **six** health benefits of consuming functional foods. (6 marks)

- (b) Identify **one** national health priority area that could be supported by the inclusion of a processed functional food in the diet. Describe a processed functional food and state how it could support this national health priority. (5 marks)

Question 30

(20 marks)

The food industry is constantly changing. New discoveries and advances in technology and science have the potential to offer food product manufacturers the opportunity to develop innovative products that meet the needs of consumers and increase their profitability.

- (a) Outline **four** impacts of the application of biotechnology on food production. (4 marks)

- (b) Identify and describe **one** emerging technology that is used by product developers to maintain the safety and quality of food during its storage and distribution to consumers. (4 marks)

ACKNOWLEDGEMENTS

Section Two

Question 23 Data source: Australian Institute of Health and Welfare (AIHW). (2012). *Australia's food and nutrition 2012*. Canberra: AIHW, p.123.

Section Four

Question 25 Adapted from: O'Leary, C. (2013, January 16). New plan for a healthier WA. The *West Australian*, p. 5.

Question 27 Table adapted from: Australian Institute of Health and Welfare (AIHW). (2012). Proportion of children meeting the recommended serves of vegetables, aged 2–16, 2007. *Australia's food and nutrition 2012*. Canberra: AIHW, p.149.

Table adapted from: Australian Institute of Health and Welfare (AIHW). (2012). Proportion of children meeting the recommended serves of fruit, aged 2–16, 2007. *Australia's food and nutrition 2012*. Canberra: AIHW, p.149.

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