



Western Australian Certificate of Education Examination, 2014

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: 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 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	20	20	20	20	20
Section Two: Short answer	8	8	100	70	60
Section Three: Extended answer	3	2	60	40	20
Total					100

Instructions to candidates

- The rules for the conduct of Western Australian external examinations are detailed in the *Year 12 Information Handbook 2014*. 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 and Three: 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.

Section One: Multiple-choice

20% (20 Marks)

This section has **20** 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: 20 minutes.

1. Under consumption of iron can lead to
 - (a) hypertension.
 - (b) osteoporosis.
 - (c) anaemia.
 - (d) malnutrition.

2. The chemical component of bread responsible for the distinct aroma and flavour after toasting is
 - (a) yeast.
 - (b) sugar.
 - (c) protein.
 - (d) starch.

3. Two litres of milk costs \$4.80. The cost of 1½ cups of milk is
 - (a) 30 cents.
 - (b) 90 cents.
 - (c) \$1.20.
 - (d) \$2.40.

4. The **most** difficult aspect of food safety to control during food processing is
 - (a) sanitisation of work benches.
 - (b) personal hygiene practices.
 - (c) the storage temperature of food.
 - (d) the reheating of cooked food.

5. Consumers are influenced to purchase 'dolphin friendly' tuna due to
 - (a) ethical concerns.
 - (b) economic factors.
 - (c) health issues.
 - (d) government policies.

6. Micro-encapsulation is used to
- (a) kill microorganisms that are present.
 - (b) extend the shelf life of a food product.
 - (c) mask the flavour of an added ingredient.
 - (d) maintain the freshness of a food product.
7. Meat is marinated to
- (a) denature collagen.
 - (b) coagulate protein.
 - (c) destroy bacteria.
 - (d) emulsify fat.
8. An advantage of using high pressure processing in food production is that it
- (a) extends the shelf life without preservatives.
 - (b) can be used on almost any food product.
 - (c) is an inexpensive processing technique.
 - (d) produces food that requires no refrigeration.
9. An additive used to prolong shelf life and prevent rancidity in margarine is
- (a) a humectant.
 - (b) an emulsifier.
 - (c) a bleach.
 - (d) an antioxidant.
10. When setting up a Hazard Analysis Critical Control Point system, the purpose of record keeping is to
- (a) check that all personnel are applying the same standards.
 - (b) identify procedures that control and eliminate hazards.
 - (c) check whether the system is working effectively.
 - (d) verify that critical control points are kept within set limits.
11. Which of the following are national health priorities in Australia?
- (a) obesity, diabetes mellitus, inactivity
 - (b) inactivity, depression, drug abuse
 - (c) dementia, drug abuse, depression
 - (d) dementia, obesity, diabetes mellitus

12. Health professionals can assess the intake of essential nutrients by individuals or demographic groups in Australia by using the
- (a) Australian Dietary Guidelines.
 - (b) Nutrient Reference Values.
 - (c) Australian Guide to Healthy Eating.
 - (d) Recommended Daily Intakes.
13. A food business in Perth that fails to develop an approved food safety plan is in contravention of the
- (a) *Trade Practices Act (1974)*.
 - (b) *Food Standards Australia and New Zealand Act (1991)*.
 - (c) *Local Government Food Act (2010)*.
 - (d) *Western Australian Food Act (2008)*.
14. A biotechnological approach to the management of food waste is the use of
- (a) methane.
 - (b) toxins.
 - (c) microbes.
 - (d) genes.
15. A government policy that imposes a charge for both food consumed on the premises from which it is supplied and hot take-away food is the
- (a) goods and services tax.
 - (b) food producers subsidy.
 - (c) imported goods tariff.
 - (d) free trade agreement tax.
16. Environmental issues that affect the equitable distribution of global food resources include
- (a) climate change and civil unrest.
 - (b) trade relationships and civil unrest.
 - (c) climate change and urbanisation.
 - (d) urbanisation and trade relationships.
17. Primary food processing techniques result in
- (a) radical change to the chemical properties of food.
 - (b) minimal change to the physical properties of food.
 - (c) radical change to the sensory properties of food.
 - (d) minimal change to the retail price of food.

18. Moisture loss that causes shrinkage of meat is due to the
- (a) processing environment.
 - (b) additional ingredients used.
 - (c) addition of preservatives.
 - (d) processing aids selected.
19. Unequal distribution of safe, quality foods across Australia can result in
- (a) under and over production of food.
 - (b) excessive processing of food products.
 - (c) under and over consumption of food.
 - (d) unsafe food transportation and storage.
20. Biological farming systems are based on processes that
- (a) increase the nutrients in food.
 - (b) naturally optimise soil quality.
 - (c) accelerate the action of fertilisers.
 - (d) produce high crop yields.

End of Section One

Section Two: Short answer

60% (70 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: 100 minutes.

Question 21

(10 marks)

- (a) Identify a food product you have prepared and modified during the course. Explain the purpose for modifying this food product. (2 marks)

Food product: _____

Question 21 (continued)

Complete the table below.

- (b) Describe **two** modifications made to the ingredients and **two** modifications made to the processing techniques for the food product identified in part (a). Justify **one** reason for selecting each modification so that the product serves the purpose for which it was modified. (8 marks)

Modification	Justification
To ingredients	For ingredient modification
One: _____ _____ _____ _____	One: _____ _____ _____ _____
Two: _____ _____ _____ _____	Two: _____ _____ _____ _____
To processing techniques	For processing technique modification
One: _____ _____ _____ _____	One: _____ _____ _____ _____
Two: _____ _____ _____ _____	Two: _____ _____ _____ _____

Question 22

(9 marks)

Complete the table below.

List **three** processing techniques that affect the properties of eggs. Explain how and why each processing technique affects the properties of eggs in food preparation.

Processing technique	Explanation
One: <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
Two: <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
Three: <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>

Question 27

(10 marks)

The production of genetically modified crops has caused controversy in Australia. Food producers and consumers continue to debate its feasibility. Moratoriums and petitions recommending the suspension of genetically modified crop production have been organised by producers, consumers and interest groups.

- (a) Discuss **two** reasons why food producers might recommend the suspension of the production of genetically modified crops. (4 marks)

- (b) Describe **two** benefits to food producers of being able to grow genetically modified crops. (4 marks)

- (c) Describe how and why Australian consumers are informed of the presence of genetically modified ingredients in food products. (2 marks)

See next page

Section Three: Extended answer

20% (40 Marks)

This section contains **three (3)** questions. Answer **two (2)** questions only. Write your answers in the spaces provided following Question 31.

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.

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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.

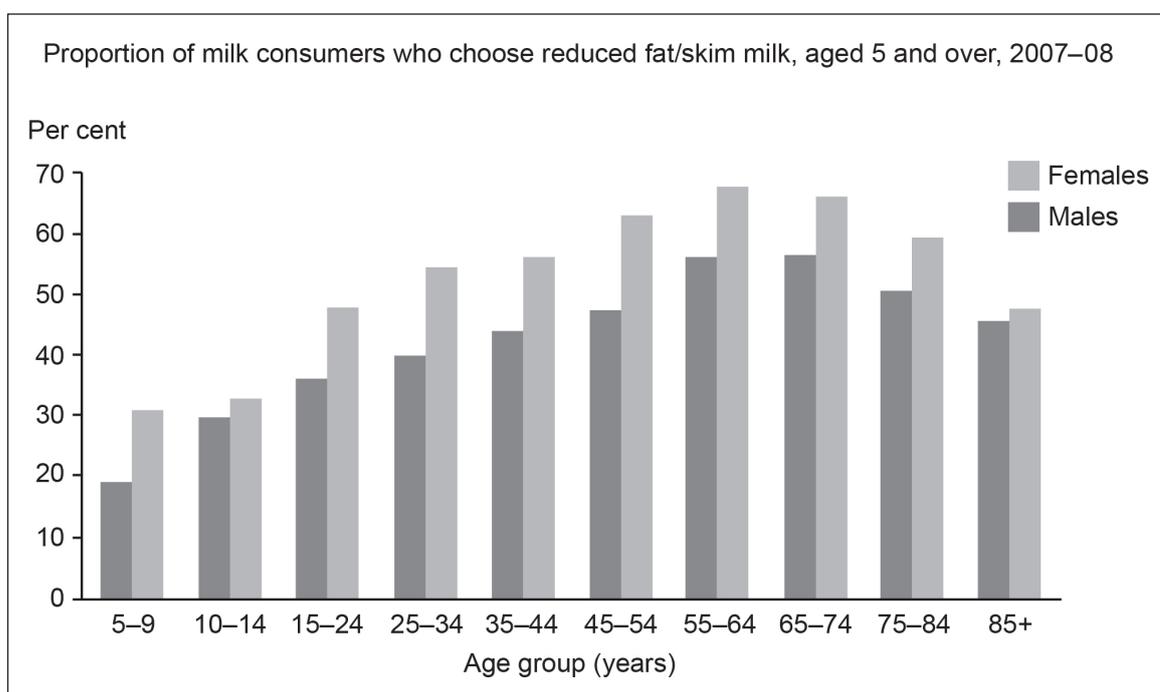
Suggested working time: 60 minutes.

Question 29

(20 marks)

Foods are modified or fortified to meet nutritional needs of demographic groups.

- (a) Explain the difference between a modified food product and a fortified food product. (2 marks)
- (b) Interpret the graph below and identify **two** trends in the data for the consumption of reduced fat/skim milk in the 5–64 age range. Propose **two** reasons to explain each trend. (6 marks)



- (c) Using examples, argue **three** points for and **three** points against the consumption of fortified and/or modified foods. (12 marks)

See next page

Question 30

(20 marks)

Advancements in food preservation technologies have resulted in a reduction in food deterioration and spoilage.

- (a) Identify **two** factors, other than exposure to moisture, that cause food deterioration and spoilage. (2 marks)

- (b) Removal of moisture is a food preservation principle.

Explain how this principle reduces food deterioration and spoilage and describe two applications of this principle. (6 marks)

Traditional food packaging practices relied mainly on the use of chemicals to extend the shelf life of foods. More recently, food deterioration and spoilage has been reduced by advances in food packaging technologies such as those illustrated below.

- (c) For each of the **four** commercially processed food products, explain how the packaging technology used reduces food deterioration and spoilage. (12 marks)

<p style="text-align: center;">A Fresh baby spinach</p> 	<p style="text-align: center;">B Beef sausages</p> 
<p style="text-align: center;">C Bacon rashers</p> 	<p style="text-align: center;">D Long life milk</p> 

Question 31

(20 marks)

A new line of food and beverage products for children has been developed by the Yum4foods company. These products have low nutritional value and are pitched at a higher price than competing brands.

The marketing mix strategies used to promote the new line are tailored so that they appeal specifically to children and encourage them to pressure their parents to purchase the products. The Australian Association of National Advertisers (AANA) Code for Advertising has been developed to reduce the influences that inappropriate advertising strategies have on children.

- (a) Comment on the potential for the AANA Code for Advertising to regulate Yum4foods' advertising of food and beverage products to children. (2 marks)
- (b) Discuss **three** practices recommended by the AANA Code for Advertising that Yum4foods needs to consider when advertising food and beverage products to children. (6 marks)

Yum4foods is planning to launch its new beverage to the marketplace. The product will be water based and is designed to appeal to the 2 to 4-year-old consumer market.

- (c) Identify **four** marketing mix strategies appropriate for the above scenario. For each strategy, discuss **one** approach Yum4foods needs to consider in order to maximise the success of the product in the marketplace. (12 marks)

End of questions

ACKNOWLEDGEMENTS

Section Three

- Question 29 (b)** Adapted from: Australian Institute of Health and Welfare. (2012). Figure 7.20: Proportion of milk consumers who choose reduced fat/skim milk, aged 5 and over, 2007–08 [Graph]. In *Australia's Food & Nutrition* 2012, p156. Retrieved February 26, 2014, from www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=10737422837. Used under a Creative Commons BY 3.0 licence.

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