



Western Australian Certificate of Education Examination, 2010

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

To be provided by the candidate

Standard items: pens, pencils, eraser, correction fluid/tape, 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	7	7	70	46	40
Section Three: Extended answer	1	1	40	20	20
Section Four: Extended answer (Context-specific)	6	1	45	25	25
Total					100

Instructions to candidates

- The rules for the conduct of Western Australian external examinations are detailed in the *Year 12 Information Handbook 2010*. 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, do not erase or use correction fluid, and shade your new answer. 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(s) 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, do not erase or use correction fluid, and shade your new answer. 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. Critical thinking is the practice of
 - (a) criticising the personal values and experiences of others.
 - (b) questioning the personal values and experiences of others.
 - (c) questioning personal values and experiences of self and others.
 - (d) criticising facts without questioning evidence.

2. The skill of pursuing and realising opportunities through the development of innovative strategies is known as
 - (a) technology.
 - (b) investigation.
 - (c) creativity.
 - (d) enterprise.

3. Genetic influences affecting the health and wellbeing of individuals and populations include
 - (a) gender, family food habits, activity levels.
 - (b) race, body type, gender.
 - (c) race, family medical history, nutritional knowledge.
 - (d) gender, family medical history, activity levels.

4. Emerging technologies that facilitate the supply of food for current and future world populations include
 - (a) biotechnology and food distribution technology.
 - (b) biotechnology and waste disposal technology.
 - (c) technology process and waste disposal technology.
 - (d) technology process and market research.

5. The selection, storage, preparation and presentation of food products is influenced by which of the following food properties?
 - (a) nutritional properties
 - (b) sensory properties
 - (c) physical properties
 - (d) functional properties

See next page

6. To ensure food quality, which factor controls the way food behaves in the food processing chain?
- (a) temperature
 - (b) price
 - (c) markets
 - (d) distribution
7. Testing to check the standards of raw materials or products before, during and after production of food is
- (a) quality assurance.
 - (b) quality management.
 - (c) quality control.
 - (d) quality guarantee.
8. Sustainable solutions to meet global food requirements are driven by
- (a) food likes and dislikes.
 - (b) societal issues and trends.
 - (c) laws and regulations.
 - (d) food processing systems.
9. Target market groups are population groups that
- (a) demand nutritious, safe foods.
 - (b) have the same psychological characteristics.
 - (c) have the same disposable income.
 - (d) have common characteristics.
10. Goal setting, decision making and conflict resolution are
- (a) interpersonal skills.
 - (b) reflective skills.
 - (c) values and beliefs.
 - (d) technology skills.
11. The processing technique responsible for the smoothness of a gelatinised food product is
- (a) aeration.
 - (b) emulsification.
 - (c) agitation.
 - (d) solidification.
12. Which of the following is not affected by oxidative reactions?
- (a) proteins
 - (b) carbohydrates
 - (c) oils
 - (d) fats

13. There is some opposition to the use of genetic modification in food systems in Australia because
- (a) genetic modification technology is seen as experimental.
 - (b) of a lack of feasibility studies on future profits from genetically modified crops.
 - (c) of the lack of long term study of the effect on health of genetic modification.
 - (d) unwillingness to assist underdeveloped countries resolve food shortages.
14. Scientific methods used to evaluate food products, services and systems include
- (a) benchmarking and quantitative analysis.
 - (b) physical and qualitative analysis.
 - (c) benchmarking and sensory analysis.
 - (d) qualitative and quantitative analysis.
15. The Australian Dietary Guidelines apply to
- (a) the total diet.
 - (b) people with disease.
 - (c) individual food products.
 - (d) individual meals.

End of Section One

Section Two: Short answer**40% (46 Marks)**

This section has **seven (7)** 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(s) that you are continuing to answer at the top of the page.

Suggested working time: 70 minutes.

Question 16**(9 marks)**

- (a) Define the term 'quality assurance' and identify **one (1)** reason why it is needed in the food industry. (2 marks)

- (b) Outline the principles of a food safety quality assurance program relevant to the workplace. (7 marks)

See next page

Question 17

(4 marks)

- (a) Give **two (2)** reasons why food manufacturers add or remove nutrients to enhance the nutritive value of food products. (2 marks)

- (b) Choose **two (2)** food products that have been enhanced by the addition of nutrients and identify the impact on the health of individuals. (2 marks)

Food product	Impact on health
1.	
2.	

Question 18

(4 marks)

The use and application of emerging technologies in the food industry raise health, ethical, environmental and economic concerns. Describe briefly **one (1)** negative impact for each type of concern.

Health: _____

Ethical: _____

Environmental: _____

Economic: _____

Question 19

(10 marks)

(a) Identify **two (2)** functional properties of proteins.

(2 marks)

(b) Identify **four (4)** processing techniques that alter the structure of protein. Name **one (1)** food product where each processing technique is applied. (4 marks)

Processing technique	Food product
1.	
2.	
3.	
4.	

(c) Select **one (1)** processing technique and **one (1)** food product in part (b) and identify the protein in the food product. Describe the impact of the functional property on the food product. (4 marks)

Question 20

(8 marks)

- (a) Provide **two (2)** reasons why food producers collect and analyse data before beginning the development of new food products, processes, techniques, services or systems.

(2 marks)

- (b) Explain briefly **three (3)** data collection sources that could be used by food manufacturers to determine the need for new food products, processes, techniques, services or systems.

(3 marks)

The following parts of question 20(c) refer to the graph below.



(c) (i) Identify the percentage of overweight males in the 55-64 age group. (1 mark)

(ii) Identify the percentage increase in the number of obese males between the 15-24 age group and the 25-34 age group. (1 mark)

(iii) Compare the incidence of obesity in females aged 15-24 with the incidence of obesity in females aged 55-64 years. (1 mark)

Question 21

(6 marks)

- (a) Identify **three (3)** consumer values related to the supply of food. Use industry terminology to describe **one (1)** influence of each on legal and regulatory processes. (3 marks)

Consumer value	Influence on legal and regulatory process

- (b) Describe **one (1)** impact of each of the issues of trade relationships, political decisions and natural disasters on the availability of food products to international markets. (3 marks)

Trade relationships: _____

Political decisions: _____

Natural disasters: _____

Question 22

(5 marks)

Describe briefly **five (5)** benefits to consumers of commercial food processing systems.

End of Section Two

See next page

Section Three: Extended answer**20% (20 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(s) that you are continuing to answer at the top of the page.

Suggested working time: 40 minutes.

Question 23**(20 marks)**

- (a) Explain the term 'biotechnology' as it relates to food production. Describe **four (4)** examples where the application of biotechnology has been used in the production of food. (5 marks)

(c) Describe **five (5)** societal issues that drive the development of innovative and sustainable solutions to meet global food requirements.

(5 marks)

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

Candidates are required to choose one of the following options, according to which context they studied in 2010. This section is divided into three (3) contexts.

Complete **one (1)** context only. There are two questions per context. Answer **one (1)** question only.

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(s) that you are continuing to answer at the top of the page.

Suggested working time: 45 minutes.

Tick one of the boxes in columns two and three to indicate your choice of context and question option.

Context	✓	Question ✓	Pages
Hospitality	<input type="checkbox"/>	Q.24 <input type="checkbox"/> or Q.25 <input type="checkbox"/>	18–23
Nutrition and Health Promotion	<input type="checkbox"/>	Q.26 <input type="checkbox"/> or Q.27 <input type="checkbox"/>	24–29
Product Development	<input type="checkbox"/>	Q.28 <input type="checkbox"/> or Q.29 <input type="checkbox"/>	30–35

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

- (b) Discuss **two (2)** consumer beliefs and **two (2)** consumer values that influence the production of products and services in the hospitality industry. (8 marks)

(c) Discuss **two (2)** positive and **two (2)** negative examples of the influence of the hospitality industry on the nutritional wellbeing of individuals. Draw **one (1)** conclusion about the response of the hospitality industry to concerns regarding the nutritional wellbeing of individuals. (5 marks)

or

- (c) Using the population groups identified in part (a), describe **three (3)** food consumption patterns that reduce the health status of individuals. Identify **one (1)** Australian Dietary Guideline for adults which has been designed to improve each consumption pattern. (6 marks)

or

Question 27

(25 marks)

- (a) Using **two (2)** examples of food fashion, describe briefly their impact on the health of individuals. (2 marks)

- (b) Identify **five (5)** factors that influence the unequal distribution of nutritious food resources. Describe **two (2)** impacts of each factor on global food consumption patterns. (15 marks)

(c) Explain **two (2)** methods used by food product developers to provide information to consumers on each of health, ethical, environment and economic concerns. (8 marks)

(b) Identify **four (4)** additives used in food product development and give the function of each. (8 marks)

ACKNOWLEDGEMENTS

Question 20(c)

Source from: Australian Bureau of Statistics. (2010). 4364.0 National Health Survey: 2007-08. Retrieved September, 2010, from www.abs.gov.au/ausstats/abs@.nsf/mf/4364.0, and 4715.0 National Aboriginal and Torres Strait Islander Health Survey: 2004-05. Retrieved September, 2010, from www.abs.gov.au/AUSSTATS/abs@.nsf/mf/4715.0.

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