



Western Australian Certificate of Education Examination, 2012

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 tape/fluid, 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	60	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 2012*. 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(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.

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. The term 'mise-en-place' means that
 - (a) equipment is ready for use.
 - (b) kitchen preparation has been completed.
 - (c) everything is in place.
 - (d) precision cutting has been completed.

2. The technology used to produce a tomato without seeds is
 - (a) seed sterilisation technology.
 - (b) genetic modification technology.
 - (c) environmental technology.
 - (d) nanotechnology.

3. Sauces made using milk can be thickened by
 - (a) coagulation and gelatinisation.
 - (b) coagulation and denaturation.
 - (c) gelatinisation and dextrinisation.
 - (d) denaturation and dextrinisation.

4. The technology process is applied to create or modify food products
 - (a) that are expensive for consumers.
 - (b) in anticipation of consumer needs.
 - (c) following a step-by-step process.
 - (d) that meet identified consumer needs.

5. The reactions between processing techniques and ingredients are referred to as the
 - (a) nutritional properties of food.
 - (b) fortified properties of food.
 - (c) modified properties of food.
 - (d) functional properties of food.

See next page

6. Consumer demand for a safe, quality food supply is
- (a) a political issue.
 - (b) a societal issue.
 - (c) an environmental issue.
 - (d) a nutritional issue.
7. A synthetic additive used to prevent the separation of a lipid and water is an
- (a) egg white.
 - (b) antioxidant.
 - (c) emulsifier.
 - (d) unsaturated oil.
8. A sustainable food supply has become a global priority because of the
- (a) expanding world population.
 - (b) shortage of local food supplies.
 - (c) production of organic food.
 - (d) consumption of convenience food.
9. When a cake mixture containing self-raising flour is moistened, stirred and baked, the gases produced that cause aeration are
- (a) oxygen and steam.
 - (b) carbon dioxide and steam.
 - (c) carbon dioxide and air.
 - (d) air and oxygen.
10. Vacuum packaging, active packaging and gas packaging are examples of
- (a) tamper evident packaging.
 - (b) intelligent packaging.
 - (c) modified atmosphere packaging.
 - (d) aseptic packaging.
11. The use of microorganisms, genes or hormones to produce innovative food products is known as
- (a) sustainability.
 - (b) genetic modification.
 - (c) value-adding.
 - (d) biotechnology.

12. Consumers have the right to be able to purchase food that is safe, value for money and includes accurate labelling information. This enables them to
- (a) buy food that is cheap.
 - (b) make informed food decisions.
 - (c) read and interpret food labels.
 - (d) access food from a range of outlets.
13. Safe processing, storage, marketing and distribution systems mean that consumers can
- (a) have confidence in the quality of the foods they purchase.
 - (b) purchase a wide range of food from supermarkets.
 - (c) store purchased foods for extended periods of time.
 - (d) be confident that food is equitably marketed and distributed.
14. Foods that have been processed to provide sustenance, improve wellbeing or reduce the risk of disease are known as
- (a) natural foods.
 - (b) organic foods.
 - (c) functional foods.
 - (d) innovative foods.
15. Consumer concerns about selective production practices in the food industry include the impact on
- (a) animal welfare and product distribution.
 - (b) human health and food modification.
 - (c) product distribution and food modification.
 - (d) animal welfare and human health.

End of Section One

See next page

Section Two: Short answer**40% (60 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(s) that you are continuing to answer at the top of the page.

Suggested working time: 70 minutes.

Question 16**(9 marks)**

When developing innovative processed foods, food producers frequently add nutrients to improve flavour. However, these additions do not always improve the nutrition of the products and frequently contribute to the poor health status of consumers. In response to an increased knowledge of the impact of food intake on health, consumers are demanding more nutritious food products.

Identify **three** nutrients commonly added to food during processing that can compromise health. For each nutrient identified, describe **two** ways in which food producers have responded to consumer demand.

See next page

Question 17

(6 marks)

Identify **two** functional properties of carbohydrates. Describe **two** changes that occur in each of these properties as a result of food processing.

Question 18

(10 marks)

The National Health Priority areas were developed in response to the increase in the prevalence of chronic diseases in the Australian population.

- (a) List **three** health areas that have been identified as National Health Priorities. (3 marks)

- (b) Provide **three** reasons for the increase in the prevalence of chronic diseases in the Australian population. (3 marks)

- (c) Describe **two** impacts of the National Health Priorities on the Australian community. (4 marks)

Question 19**(10 marks)**

Read the following case study.

A market research company has collected data for a food producer that plans to develop a range of heat and serve meals to introduce to the market. The data were collected by administering a survey to 100 customers at a supermarket in a particular locality, between 2 pm and 3.30 pm, when parents would be shopping before collecting their children from school.

Questions about heat and serve meals in the survey related to preferences about the nutrition of the meals, individual or family portions, meat or vegetarian ingredients, microwaveable or foil packaging and whether the meals should be fresh or frozen.

When the data were collated and analysed, it was found that:

- three quarters of the respondents preferred low kilojoule meals
- the majority preferred meals packaged in family portions
- less than 50% preferred vegetarian meals
- four-fifths preferred microwaveable containers
- 20% preferred meals to be fresh.

- (a) On the basis of the survey results, describe the features the food producer should incorporate in the development of the range of heat and serve meals. (5 marks)

See next page

- (b) How many of the respondents preferred frozen meals? What was the minimum number of respondents who preferred meals containing meat? (2 marks)

- (c) Evaluate the reliability of the data collection method used by the market research company. (3 marks)

Question 20

(6 marks)

- (a) State the purpose of the Western Australian Food Act (2008). (2 marks)

- (b) List **four** requirements of the Western Australian Food Act (2008) that a food business must comply with. (4 marks)

Question 21

(8 marks)

Discuss how **four** strategies used to manage human resources affected the outcome of a design challenge in which you worked in a team to prepare and present food.

Question 22

(5 marks)

Identify and evaluate **one** source of information available to consumers that addresses health concerns.

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)**

- (a) State **three** reasons why the Australian Dietary Guidelines were developed. (3 marks)

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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.

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: 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"/>	Q.25 <input type="checkbox"/> or Q.26 <input type="checkbox"/>	16–22
Nutrition and health promotion	<input type="checkbox"/>	Q.27 <input type="checkbox"/> or Q.28 <input type="checkbox"/>	24–28
Product development	<input type="checkbox"/>	Q.29 <input type="checkbox"/> or Q30 <input type="checkbox"/>	30–34

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

Context: Hospitality

Answer **one (1)** question only, either Question 25 **or** Question 26.

Suggested working time: 45 minutes.

Question 25**(20 marks)**

(a)

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(c) Describe each of the following:

- the action a customer can take if a food product is found to be unsafe to eat
 - the benefit to manufacturers of food safety regulations
 - the responsibility of Food Standards Australia and New Zealand (FSANZ) for food safety.
- (6 marks)

or

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See next page

Question 26

(20 marks)

A hospital caterer is revising the menus to include dishes that are more appropriate for patients with Type 2 diabetes (Diabetes Mellitus). Even though the hospital menus include diabetic options, observations show that many patients who should select from the diabetic menu make their selections from the main menu. The caterer is aware that many of the choices patients make do not meet the requirements of a diabetic diet.

Staff wages and production costs have risen steeply over the past six months but the budget will not be reviewed until the end of the next financial year.

The budget will not extend to providing more menu choices solely for the diabetic patients. Any new dishes must also appeal to general patients so that they can be mass produced to meet the constraints of the budget.

Read the prototype recipe below.

Lasagne

Ingredients	Method
1 tablespoon oil 1 onion, diced 1 teaspoon crushed garlic 250 gms minced beef 1 can chopped tomatoes 1 tablespoon tomato paste 1 stock cube salt and pepper 200 gms instant lasagne sheets ¼ cup grated tasty cheese	<ul style="list-style-type: none"> • Turn oven to 180° C. • Heat oil, fry onion and garlic. • Add mince, tomatoes, tomato paste, crumbled stock cube, salt and pepper. • Simmer for 20 minutes. • Place a thin layer of meat sauce in a baking dish, then a layer of lasagne sheets. Repeat layering until dish is full. Finish with a layer of lasagne sheets. • Cover with cheese sauce, sprinkle with grated cheese. • Bake for 30 minutes until golden brown.
<p><i>Cheese sauce</i></p> 1 tablespoon butter 1 tablespoon flour 1 cup milk ½ teaspoon salt pepper ⅓ cup grated tasty cheese Serves two people.	<ul style="list-style-type: none"> • Melt butter in saucepan. • Add flour, stir for one minute until smooth. • Add milk gradually, stirring between each addition of milk until smooth. • Cook, stirring, for one minute. • Add cheese, stir until melted.

See next page

- (a) Describe **five** modifications that could be made to the recipe to make it suitable for the diabetic target group. Show how each modification meets the needs of Type 2 diabetics.
(15 marks)

(b) Identify **one** genetic and **four** environmental factors that contribute to the risk of contracting Type 2 diabetes. (5 marks)

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See next page

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)

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See next page

(c)

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or

Question 28

(20 marks)

- (a) Explain how **two** emerging technologies are used to alter the nutritional content of food. Provide an example of a food produced using each technology.

(12 marks)

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See next page

Context: Product development

Answer **one (1)** question only, either Question 29 **or** Question 30.

Suggested working time: 45 minutes.

Question 29**(20 marks)**

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(c) Describe each of the following:

- the action a consumer can take if a food product is found to be unsafe to eat
- the benefit to manufacturers of food safety regulations
- the responsibility of Food Standards Australia and New Zealand (FSANZ) for food safety. (6 marks)

or

See next page

Question 30

(20 marks)

At all stages of the food processing chain, 'from paddock to plate', the use of natural resources is essential to the production of food. There is increasing concern about the effect on the environment, and the sustainability, of these practices.

- (a) Identify **four** practices used in the food industry that affect the environment. Describe how each practice threatens the development of a sustainable food supply. (12 marks)

- (b) Explain how consumers can support the development of a sustainable food supply. Provide **four** examples. (8 marks)

End of questions

ACKNOWLEDGEMENTS

Section Four

- Question 25(a)** Diagram adapted from: Heath, G., McKenzie, H., & Tully, L. (2012). (2012). *VCE Food and Technology 2012 Units 3 and 4*. Port Melbourne, Vic: Cambridge University Press, p. 10.
- Question 26** Recipe for Lasagne by courtesy of the examining panel.
- Question 27(a)** Diagram adapted from: Heath, G., McKenzie, H., & Tully, L. (2012). (2012). *VCE Food and Technology 2012 Units 3 and 4*. Port Melbourne, Vic: Cambridge University Press, p. 10.
- Question 29(a)** Diagram adapted from: Heath, G., McKenzie, H., & Tully, L. (2012). (2012). *VCE Food and Technology 2012 Units 3 and 4*. Port Melbourne, Vic: Cambridge University Press, p. 10.

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