



Western Australian Certificate of Education Examination, 2010

Question/Answer Booklet

FOOD SCIENCE AND TECHNOLOGY

Stage 2

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	20	20	30	20	20
Section Two: Short answer	6	6	90	50	50
Section Three: Extended answer	1	1	30	15	15
Section Four: Extended answer (Context-specific)	6	1	30	15	15
Total					100

Instructions to candidates

1. 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.

2. 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 answers in this Question/Answer Booklet.

3. 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.

4. 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.

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, 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: 30 minutes.

1. Which of the following are examples of mechanical aeration?

The use of

- (a) sifting and beating.
- (b) bicarbonate of soda and cream of tartar.
- (c) yeast and warm water.
- (d) whisking and baking powder.

2. Market dynamics is the process by which the market

- (a) responds to consumer demands.
- (b) establishes pricing for food products.
- (c) adjusts to food trends and innovation.
- (d) establishes consumer needs and wants.

3. A 'food production system' refers to

- (a) a system for purchasing commodities for human consumption.
- (b) the growing of food for human consumption.
- (c) interrelated actions that transport food from the producer to the consumer.
- (d) interrelated actions that produce food for human consumption.

4. 'Deceptive product downsizing' refers to the practice of

- (a) reducing the weight and the price of a food product.
- (b) reducing the weight of a food product without reducing the price.
- (c) weighing food incorrectly and charging the consumer for more than requested.
- (d) including the weight of packaging in the final cost.

5. A strategy to maximise the use of human resources is

- (a) employing more personnel in busy periods.
- (b) training staff to use simple skills repetitively.
- (c) training staff to be multi-skilled.
- (d) developing a fixed roster for key personnel.

6. Consumers want more recyclable packaging because
- (a) they are paying more for non-recyclable packaging.
 - (b) of the amount of landfill caused by non-recyclable packaging.
 - (c) recyclable packaging cannot be reused.
 - (d) non-recyclable packaging does not maintain the safety of food.
7. 'Value-added foods' are those
- (a) that have had nutrients removed to make them healthier.
 - (b) that have been produced without the use of fertilisers or pesticides.
 - (c) whose value or sale price has been decreased by a decreased amount of processing.
 - (d) whose value or sale price has been increased by an increased amount of processing.
8. In developing a food product to cater for gluten intolerance, which one of the following commodities would be suitable?
- (a) wheat flour
 - (b) corn flour
 - (c) barley flour
 - (d) rye flour
9. 'Dextrinisation' is
- (a) heating sugar to a syrup and then cooling.
 - (b) when sugar in food is browned during cooking.
 - (c) the breakdown of starch during baking, adding sweetness.
 - (d) the thickening action of starch during the cooking process.
10. In the pickling process, which of the following combinations of ingredients has the functional properties of preservation?
- (a) salt, sugar and water
 - (b) water, vinegar and sugar
 - (c) vinegar, salt and water
 - (d) sugar, salt and vinegar
11. Undesirable functional properties of food include
- (a) oxidation and aeration.
 - (b) leavening and oxidation.
 - (c) leavening and rancidity.
 - (d) rancidity and oxidation.
12. Effective conflict resolution skills require
- (a) positive thinking, active listening, understanding and forcefulness.
 - (b) understanding, active listening, negotiation and independence.
 - (c) active listening, cooperation, independence and positive thinking.
 - (d) active listening, positive thinking, understanding and cooperation.

13. The processing technique of fermentation is used in the making of
- (a) bread and jam.
 - (b) sauerkraut and jam.
 - (c) bread and sauerkraut.
 - (d) sauerkraut and dried fruit.
14. 'Caramelisation' is
- (a) heating sugar to a syrup and then cooling.
 - (b) when sugar in food is browned during cooking.
 - (c) the breakdown of starch during baking, adding sweetness to products.
 - (d) the thickening action of starch during the cooking process.
15. The use of egg to stabilise an oil and vinegar mixture is an example of
- (a) emulsification.
 - (b) denaturation.
 - (c) gelatinisation.
 - (d) coagulation.
16. By law, a food label must include
- (a) a bar code.
 - (b) nutritional recommendations.
 - (c) product recall information.
 - (d) the recommended serving size.
17. 'Refresh' means to
- (a) plunge hot food into iced water.
 - (b) shallow fry, tossing food as it cooks.
 - (c) warm up or reheat previously cooked food.
 - (d) cook without colouring, usually gently.
18. Denaturation and coagulation are both functional properties of
- (a) glucose.
 - (b) proteins.
 - (c) fats.
 - (d) starch.
19. The agent that causes jam to set is
- (a) pectin.
 - (b) dextrin.
 - (c) gluten.
 - (d) gelatin.
20. Mise-en-place duties for food preparation include
- (a) washing and trimming vegetables, chopping parsley, cleaning the kitchen.
 - (b) washing and trimming vegetables, chopping parsley, making marinades.
 - (c) chopping parsley, making marinades, cleaning the kitchen.
 - (d) making marinades, cleaning the kitchen, washing and trimming vegetables.

End of Section One

See next page

Section Two: Short answer

50% (50 Marks)

This section has **six (6)** 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: 90 minutes.

Question 21**(6 marks)**

- (a) In response to consumer demand traditional production practices are increasingly being used to produce safe, quality food. Explain **four (4)** consumer values that could account for this trend. (4 marks)

Consumer value one: _____

Consumer value two: _____

Consumer value three: _____

Consumer value four: _____

- (b) Explain **two (2)** impacts of consumer knowledge about products made using traditional production practices on consumer-enterprise relationships. (2 marks)

Impact one: _____

Impact two: _____

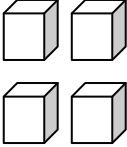
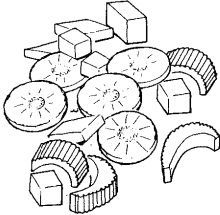
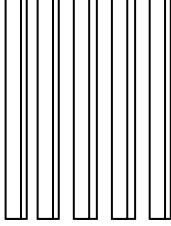
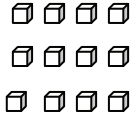
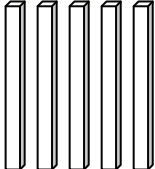
Question 22

(10 marks)

(a) Name each of the precision cuts shown in the table below. (5 marks)

(b) Identify **two (2)** food products in which each of the cuts could be used. (5 marks)

(Illustration not to scale)

	(a) Name	(b) Food Product
(i) 	Precision cut: _____	1.
		2.
(ii) 	Precision cut: _____	1.
		2.
(iii) 	Precision cut: _____	1.
		2.
(iv) 	Precision cut: _____	1.
		2.
(v) 	Precision cut: _____	1.
		2.

Question 23

(10 marks)

- (a) Describe **two (2)** specific dietary requirements for a person with a diet and lifestyle-related health issue e.g. obesity **or** type 2 diabetes **or** cardiovascular disease. (2 marks)

Health issue:

Dietary requirements:

One: _____

Two: _____

(b) Read the recipe for Choc Chip Muffins below.

<p>Ingredients: 1¾ cups SR flour 1 cup sugar ¼ cup cocoa 100 g softened butter 1 egg 1 cup sour cream ½ cup milk ½ teaspoon vanilla ¾ cup chocolate chips</p>	<p>Method: 1. Preheat the oven to 180° C and grease the muffin pans. 2. Blend butter and sugar and then beat in the egg, milk, sour cream and vanilla. 3. Mix in the chocolate chips then fold in the sifted flour. 4. Place in prepared pans and bake for 15–20 minutes. 5. Makes six large muffins.</p>
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Recommend modifications to **four (4)** ingredients and/or the method for the Choc Chip Muffins recipe that would enable it to better meet the specific dietary requirements of an individual with the health issue identified in part (a). (4 marks)

Choc Chip Muffins

Ingredient	Modification
1¾ cups SR flour	
1 cup sugar	
¼ cup cocoa	
100 g softened butter	
1 egg	
1 cup sour cream	
½ cup milk	
½ teaspoon vanilla	
¾ cup chocolate chips	
Method	

(c) Justify how each of the **four (4)** modifications recommended in part (b) makes the recipe more suitable for a person with the health issue identified in part (a).

(4 marks)

Modification one: _____

Modification two: _____

Modification three: _____

Modification four: _____

Question 24

(10 marks)

- (a) Identify **two (2)** food commodities suitable for dehydration. Explain why each would be used in a food product. (4 marks)

Food commodity one: _____

Why used: _____

Food commodity two: _____

Why used: _____

- (b) Describe **two (2)** food handling practices and **two (2)** processing techniques used to meet safety and performance requirements in dehydrated food commodities. (4 marks)

Food handling practices:

One: _____

Two: _____

Processing techniques:

One: _____

Two: _____

- (c) Give **one (1)** reason why consumers would believe dehydration is an environmentally friendly food preservation technique and **one (1)** reason why producers would believe dehydration is an environmentally friendly food preservation technique. (2 marks)

Consumers: _____

Producers: _____

See next page

Question 25

(4 marks)

Identify and explain **four (4)** features of an effective production plan.

Identify features	Explain features
1. _____	
2. _____	
3. _____	
4. _____	

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See next page

Question 26**(10 marks)**

Read the case study that follows to answer part (a).

(9 marks)

Cory recently attended a family barbecue after which a number of people suffered symptoms of moderate food poisoning. A doctor suggested that food served at the barbecue might have been responsible. The following is an account of the preparation methods Cory followed to produce Marinated Chicken and Caesar Salad:

'At 4.00 pm I picked up the food at my local shopping centre, just fifteen minutes from home. I placed all the food on the kitchen table, put the ice into the portable icebox and set about getting prepared.

'I took the bag of frozen chicken pieces, which had been marinated with the honey, soy sauce and garlic, and placed it in a sink full of warm water to defrost. Then I boiled the eggs.

'While the eggs were cooking, I tore the lettuce into pieces. I then placed the lettuce in a container and put it in the icebox with the drinks. I placed the croutons, jar of anchovies, plates and cutlery in a picnic basket. As soon as the eggs were cooked, I plunged them directly into the iced water to stop discolouration. Then I peeled the eggs and placed them in a container and put them in the icebox.

'Just before I was ready to leave I realised that I hadn't cooked the bacon. I quickly cooked it, placed it into a zip lock bag and threw it into the icebox. Lastly, I placed the defrosted chicken on top of the bacon.

'I placed the icebox and picnic basket in the car, and then rushed back inside to get the parmesan cheese from the table and my opened, half-full bottle of whole egg mayonnaise from the fridge. As there was no room left in the icebox, I placed the cheese and mayonnaise in the picnic basket.

'I made it to the barbecue in just over an hour. As soon as I got there, I assembled my Caesar Salad while my uncle cooked the chicken. Within 20 minutes we were all sitting down to a great meal. Everyone complimented me on my Marinated Chicken and Caesar Salad. I don't see how my food could have given anyone food poisoning.'

Using the Hazard Analysis Critical Control Point system (HACCP), identify **three (3)** unsafe practices in the preparation, cooking or transporting of the commodities for the two dishes. Identify **three (3)** correct food handling practices. Provide **one (1)** reason for implementing each correct practice.

(a) Enter your answers in the table below.

Unsafe food practice	Correct food safety practice	Reason for implementing correct practice
1. _____ _____		
2. _____ _____		
3. _____ _____		

(b) Describe **two (2)** legislative requirements related to food safety in food production systems. (1 mark)

End of Section Two

See next page

Section Three: Extended answer

15% (15 Marks)

This section contains **one (1)** compulsory question. Write your answer in the spaces provided.

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Suggested working time: 30 minutes.

Question 27

(15 marks)

- (a) Give **three (3)** examples of food commodities that are good sources of each of the nutrients in the table below. (3 marks)

Nutrient	Examples
Protein	
Carbohydrate	
Lipids	

- (b) Describe the function in the human body of each nutrient listed in part (a). Explain the effect on health of under-consumption **or** over-consumption of each nutrient. (6 marks)

Protein

Function:

Effect of under-consumption **or** over-consumption : (Tick which one)

Carbohydrate

Function in the body:

Effect of under-consumption or over-consumption : (Tick which one)

Lipids

Function in the body:

Effect of under-consumption or over-consumption : (Tick which one)

- (c) Using correct terminology, discuss mechanical and chemical digestion and the absorption of carbohydrate **or** protein **or** lipids into the human body. (6 marks)

Nutrient: _____

End of Section Three

Section Four: Extended answer (Context-specific)**15% (15 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.

- 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: 30 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.28 <input type="checkbox"/> or Q.29 <input type="checkbox"/>	20–23
Nutrition and Health Promotion	<input type="checkbox"/>	Q.30 <input type="checkbox"/> or Q.31 <input type="checkbox"/>	24–28
Product Development	<input type="checkbox"/>	Q.32 <input type="checkbox"/> or Q.33 <input type="checkbox"/>	29–33

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

Context: Hospitality

Answer **one (1)** question only, Question 28 or Question 29.

Suggested working time: 30 minutes.

Question 28

(15 marks)

- (a) Describe briefly a design challenge and its constraints to produce a main and dessert course menu suitable for entertaining adolescents that includes natural food products. Identify a dish produced for each course and a natural food product included in that dish. (3 marks)

Design challenge

Dish	Natural food product
Main:	
Dessert:	

- (b) Name **two (2)** varieties of each of the natural food products identified in part (a). (4 marks)

Natural food product	Varieties
1. <hr/>	1.
	2.
2. <hr/>	1.
	2.

- (c) Identify the variety of each of the natural food products selected to produce the menu described in part (a). Describe how **two (2)** sensory and **two (2)** physical properties influence the selection and performance of each variety. (8 marks)

Selected variety	Sensory and physical properties
Variety 1: <hr/>	Sensory properties: 1.
	2.
	Physical properties: 1.
	2.
Variety 2: <hr/>	Sensory properties: 1.
	2.
	Physical properties: 1.
	2.

or

See next page

Question 29

(15 marks)

- (a) Identify **three (3)** societal issues or trends that have influenced the hospitality industry over the past decade. (3 marks)

Societal issue/trend one: _____

Societal issue/trend two: _____

Societal issue/trend three: _____

- (b) Describe **two (2)** responses by the hospitality industry and **two (2)** responses by consumers to **two (2)** of the issues or trends identified in part (a). (8 marks)

Issue or trend one: _____

Response by the hospitality industry:

One: _____

Two: _____

Response by consumers:

One: _____

Two: _____

Issue or trend two: _____

Response by the hospitality industry:

One: _____

Two: _____

Response by consumers:

One: _____

Two: _____

- (c) Describe **one (1)** consequence for the health of communities of each of the issues or trends explained in part (b). (4 marks)

Consequence of issue/trend one: _____

Consequence of issue/trend two: _____

Context: Nutrition and Health Promotion

Answer **one (1)** question only, Question 30 or Question 31.

Suggested working time: 30 minutes.

Question 30

(15 marks)

In response to the results of a survey of patrons at a winter outdoor sporting venue, a small company has decided to produce a range of freshly prepared soups that can be sold at the venue.

Name a nutritious soup that includes **two (2)** natural foods and which could be included in the menu.

Name of soup: _____

- (a) Identify **two (2)** natural foods that will be included in the soup. Name **two (2)** varieties of each of the natural foods identified. (4 marks)

Natural food	Varieties
1. _____	1. _____ 2. _____
2. _____	1. _____ 2. _____

- (b) Identify the variety of each of the natural food products selected to produce the soup described in part (a). Describe how **two (2)** sensory and **two (2)** physical properties influence the selection and performance of each variety. (8 marks)

Selected variety	Sensory and physical properties
Variety 1: <hr/>	Sensory properties: 1. <hr/> 2. <hr/> Physical properties: 1. <hr/> 2. <hr/>
Variety 2: <hr/>	Sensory properties: 1. <hr/> 2. <hr/> Physical properties: 1. <hr/> 2. <hr/>

- (c) The company intends to add value to the soup in the form of additional nutrients. Name **one (1)** nutrient that could be added. Identify a natural source of the nutrient. Give **one (1)** reason why this value-adding would improve the nutrition of the soup.

(3 marks)

Nutrient: _____

Natural food source: _____

Nutritional reason for addition: _____

or

Question 31

(15 marks)

The proliferation of fast food chains has seen an increase in the consumption of take away food, with as many as one in three meals being prepared away from the home. Analysis of many of these foods reveals that they are high in saturated fat and the beverages sold to accompany them have a high kilojoule content.

- (a) Explain **four (4)** societal factors that have led to the demand for take away food.

(4 marks)

Factor one: _____

Factor two: _____

Factor three: _____

Factor four: _____

- (b) Describe **three (3)** potential consequences for the health of individuals of the trend toward an increase in the consumption of take away food.

(3 marks)

One: _____

Two: _____

Three: _____

- (c) Devise and name a healthy beverage that contains at least **four (4)** ingredients from a minimum of **three (3)** different food groups, that could be sold to accompany a take away meal.

Give **two (2)** reasons why each of these **four (4)** ingredients contributes to the nutritional value of the beverage. (8 marks)

Name of beverage: _____

Ingredient	Reason for inclusion
1. _____	1.
	2.
2. _____	1.
	2.
3. _____	1.
	2.
4. _____	1.
	2.

Context: Product Development

Answer **one (1)** question only, Question 32 or Question 33.

Suggested working time: 30 minutes.

Question 32

(15 marks)

A major fitness chain plans to introduce a mocktail juice bar at its gyms. The mission statement is 'If it's not fresh and healthy, we won't serve it'. A neighbourhood café has also announced plans for a mocktail juice bar.

- (a) For each of the four factors identified in the table below, describe **two (2)** examples of competitive market practices that the gym could use to ensure the success of its new products. (8 marks)

Factors	Competitive market practice
Product <hr/>	1.
	2.
Price <hr/>	1.
	2.
Place <hr/>	1.
	2.
Promotion <hr/>	1.
	2.

See next page

- (b) A recent newspaper article expressed concerns about the nutrition of fruit smoothies compared with that of carbonated drinks. Describe **two (2)** consequences for the health of the individual and **two (2)** consequences for the economy of the increased consumption of fruit smoothies. (4 marks)

Consequences for the health of the individual:

One: _____

Two: _____

Consequences for the economy:

One: _____

Two: _____

- (c) Explain **three (3)** societal factors that have led to the popularity of fruit smoothies. (3 marks)

Factor one: _____

Factor two: _____

Factor three: _____

or

Question 33

(15 marks)

A local fruit grower has a regular surplus of fruit and has approached you to create a new product that can be sold from her orchard. The grower realises that she is currently not taking advantage of the passing tourist trade and believes that with the right product she can develop a niche market in the area.

Identify a natural fruit commodity that could be used to create the new product.

- (a) Describe how the new food product will be processed and presented for sale. Name **two (2)** varieties of the natural fruit product that could be used. (4 marks)

Product description:

Product varieties:

One: _____

Two: _____

- (b) Describe how **two (2)** sensory and **two (2)** physical properties influence the selection and performance of each product variety. (8 marks)

Selected variety	Sensory and physical properties
Variety 1: <hr/>	Sensory properties:
	1.
	2.
Variety 2: <hr/>	Sensory properties:
	1.
	2.
	Physical properties:
	1.
	2.

- (c) Describe **three (3)** ethical issues arising from resource use that the grower has addressed by producing the new product. (3 marks)

Issue one: _____

Issue two: _____

Issue three: _____

End of questions

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