



OFFICE OF TASMANIAN  
ASSESSMENT, STANDARDS  
& CERTIFICATION

Tasmanian Certificate of Education  
External Assessment 2016

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# FOOD and NUTRITION

## (FDN315113)

Pages:	16
Questions:	7

## PART 1

Time: 70 minutes

### Candidate Instructions

1. You **MUST** make sure that your responses to the questions in this examination paper will show your achievement in the criteria being assessed.
2. This paper is divided into **THREE** sections.
3. Answer **ALL** questions in this part.
4. Answers must be written in the spaces provided on the examination paper.
5. You should make sure you answer all parts within each question so that the criterion can be assessed.
6. It is recommended that you spend approximately 70 minutes in total answering the questions in this booklet.
7. All written responses must be in English.

On the basis of your performance in this examination, the examiners will provide results on each of the following criteria taken from the course statement:

**Criterion 4** Demonstrate knowledge and understanding of the relationship between nutrition, food and health.

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# SECTION A

Answer **ALL** questions in this section.

This section is worth **15 marks**.

It is recommended you spend approximately **15 minutes** on this section.

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## Question 1

(a) (i) Name **three** nutrients which provide the body with energy. (1 mark)

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(ii) State the energy value of 1g of each of the nutrients named in (i). (1 mark)

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(b) (i) What does the term NRV stand for? Briefly explain the term. (1 mark)

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(ii) EAR and EER are NRVs. What do EAR and EER stand for? (1 mark)

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(c) (i) Proteins are made from amino acids. All amino acids contain the elements carbon and hydrogen. Give **two** other elements found in amino acids. (1 mark)

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(ii) Name **one** animal food high in protein and **one** non-animal food high in protein. (1 mark)

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**Section A continues.**

**Section A (continued)**

- (iii) List **two** functions of protein. (1 mark)
  - 1. ....
  - 2. ....

- (iv) State **one** way in which the body deals with an excess of protein. (1 mark)  
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- (d) (i) List **three** functions of fat in the body. (1 mark)
  - 1. ....
  - 2. ....
  - 3. ....

- (ii) Explain the difference between a saturated fat and an unsaturated fat. (1 mark)  
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- (iii) Briefly explain if an individual's diet should contain more fats with LDLs or with HDLs. (1 mark)  
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(e) Dietary fibre and water work together.

- (i) What is dietary fibre? How much dietary fibre is needed per day for an adult male and an adult female? (1 mark)  
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- (ii) Explain the difference between soluble and insoluble fibre. Give a food example that provides each type of fibre. (1 mark)  
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**Section A continues.**

**Section A (continued)**

- (iii) Name the condition which results from a deficiency of water. What are **two** symptoms of this condition? (1 mark)

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- (iv) List **two** functions of water in the human body. (1 mark)

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# SECTION B

Answer **ALL** questions in this section.

This section is worth **25 marks**.

It is recommended you spend approximately **25 minutes** on this section.

## Question 2

(5 marks)

(a) Explain **two** main functions of carbohydrate in the diet.

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(b) Carbohydrates can be classified as monosaccharides, disaccharides or polysaccharides. Complete the table, identifying types and food sources.

	Monosaccharides	Disaccharides	Polysaccharides
<b>Types</b>	1. 2. 3. <i>Galactose</i>	1. 2. 3.	1. 2.
<b>Food Sources</b>	1. 2.	1. <i>Milk</i> 2.	1. 2.

**Section B continues.**

**Section B (continued)**

**Question 3**

(5 marks)

(a) Minerals are essential micronutrients. Two of these are calcium and iodine.

**Calcium**

Function: .....

Good food source: .....

**Iodine**

Function: .....

Good food source: .....

(b) Iron is another essential micronutrient. Name the condition caused by a lack of iron in the diet. Give **two** symptoms of this condition.

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(c) Name the vitamin required for the absorption of iron.

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**Question 4**

(5 marks)

(a) Describe **two** different ways in which the body uses energy.

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2. ....  
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**Section B (continued)**

- (b) Define the term energy balance. How does Body Mass Index (BMI) indicate if an individual is maintaining an energy balance?

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- (c) List **two** reasons individuals have different energy requirements.

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**Question 5**

(5 marks)

- (a) Explain how sodium and potassium work together in the body.

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- (b) If an individual has a diet high in sodium, how does this affect the process explained in (a)?

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- (c) Give **two** food sources of sodium and **two** food sources of potassium.

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- (d) A diet high in sodium can lead to which condition?

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**Section B (continued)**

**Question 6**

(5 marks)

(a) It is suggested that phytoestrogens are useful in the body. Explain why.

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(b) State **two** rich food sources of phytoestrogens.

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(c) Name **two** illnesses/conditions that a diet containing phytoestrogen rich foods may assist to prevent.

1. ....

2. ....

(d) Using examples, explain the difference between a nutrient and a non-nutrient.

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**SECTION C**

Answer **ALL** questions in this section.

This section is worth **30 marks**.

It is recommended you spend approximately **30 minutes** on this section.

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**Question 7**

Processed foods containing large amounts of added sugar are contributing to a number of health conditions in Australia.

(a) (i) What is sugar? Why is it used in the food industry? (1 mark)

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(ii) Why is sugar a problem in our modern diet? Give **two** reasons. (2 marks)

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(iii) List **four** specific ways in which individuals can reduce their sugar intake. (4 marks)

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**Section C continues.**

**Section C (continued)**

- (iv) Discuss **three** strategies in relation to food that the community has put in place to help reduce the burden of overweight and obesity associated with high sugar intake. (3 marks)

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- (b) Healthy food choices contribute to overall wellbeing. A balanced diet and sufficient physical activity can reduce the risk of Type 2 Diabetes.

What is Type 2 diabetes?

Discuss Type 2 diabetes with reference to:

- Current Australian statistics
- Risk factors
- Links to other lifestyle diseases
- Preventative strategies for individuals and communities (20 marks)

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**Section C continues.**





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# FOOD and NUTRITION

## (FDN315113)

Pages:	12
Questions:	2

## PART 2

Time: 35 minutes

### Candidate Instructions

1. You **MUST** make sure that your responses to the questions in this examination paper will show your achievement in the criteria being assessed.
2. This paper is divided into **TWO** sections.
3. Answer **ALL** questions in this part.
4. Answers must be written in the spaces provided on the examination paper.
5. You should make sure you answer all parts within each question so that the criterion can be assessed.
6. It is recommended that you spend approximately 35 minutes in total answering the questions in this booklet.
7. All written responses must be in English.

On the basis of your performance in this examination, the examiners will provide results on each of the following criteria taken from the course statement:

**Criterion 5** Analyse and evaluate diets using Nutrient Reference Values and recognised food selection tools.

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# SECTION A

Answer **ALL** parts of this question.

Use your knowledge of nutrition and the information provided in Michael's Dietary Analysis to answer **Question 8** and **Question 9**.

**Question 8** – Michael's typical eating pattern over one day:

<b>Meal</b>	<b>Food</b>	<b>Portion</b>
Breakfast	Kellogg's Nutri-grain (breakfast cereal)	1 single serve box (35 g)
	Full cream milk	1 carton (250 ml)
	McDonalds hotcake (pancake)	4 pancakes
	Maple syrup	5 Tb
Morning Snacks	Biscuit, chocolate flavoured, commercial	2 biscuits
	Soft drink, Energy	500 ml
	Yoghurt, High fat	1 tub (200 g)
Lunch	Sandwich, Egg	2 sandwiches
	Biscuit, savoury, cheese-flavoured, commercial	2 biscuits
	Chocolate milk	1 carton (500 ml)
	Coffee made with milk	1 mug (240 ml)
	KFC hot chips	1 large serve
Afternoon Snacks	Biscuit, Oatmeal, commercial	2 biscuits
Dinner	Beef, steak, fillet, fried, fat trimmed	500 g
	Sauce, tomato, bottled	5 Tb
	Potato, mashed	2 cups
Snack	Biscuit, Oatmeal, commercial	2 biscuits
	Biscuit, savoury, cheese-flavoured, commercial	2 biscuits
	Ice-cream, regular, fat, chocolate	3 level scoops (5.7 cm diameter)

**Data continues.**

Data (continued)

Michael's Nutritional Profiles

Personal Details

Age (years):	18
Gender:	Male
Weight (kg):	92
Height (cm):	172
BMI:	31
Activity:	Light
Estimated Energy Requirement (EER):	13907 kJ
Basal Metabolic Rate (BMR):	8692 kJ

Energy Ratios

Protein	16.955%
Fat	32.113%
Saturated Fat	15.139%
Carbohydrates	48.670%

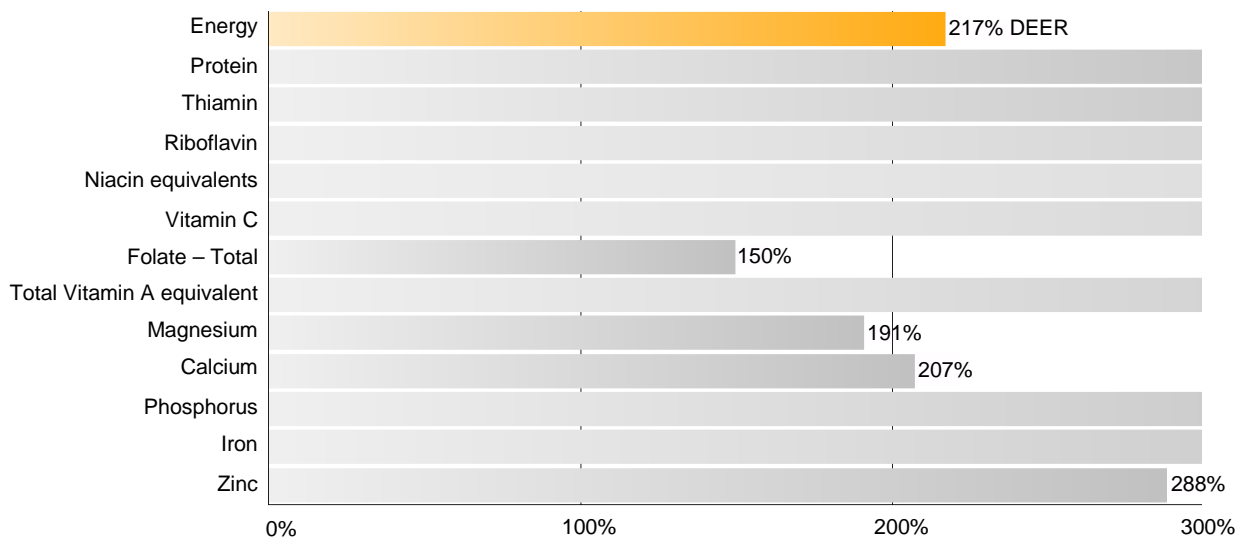
Analysis summary

	Avg/Day
Energy (kJ)	24316
Protein (g)	242
Total fat (g)	211
- Saturated	99
- Polyunsaturated	232
- Monounsaturated	76
Cholesterol (mg)	916
Total Carbohydrate (g)	737
- Sugars (g)	429
- Starch (g)	291
Water (g)	3079
Alcohol (g)	0
Dietary fibre (g)	28
<b>Vitamins</b>	
Thiamin (mg)	3.975
Riboflavin (mg)	6.198
Niacin (mg)	53.598
Niacin equivalents (mg)	101.327
Vitamin C (mg)	184.710
Folate (total) ( $\mu\text{g}$ )	494.033
Total Vit A Equivalent ( $\mu\text{g}$ )	3265.251
Retinol ( $\mu\text{g}$ )	1616.983
B Carot. Eq. ( $\mu\text{g}$ )	9876.209
<b>Minerals</b>	
Sodium (mg)	5468.244
Potassium (mg)	8450.097
Magnesium (mg)	649.771
Calcium (mg)	2177.818
Phosphorus (mg)	4351.787
Iron (mg)	35.459
Zinc (mg)	31.700

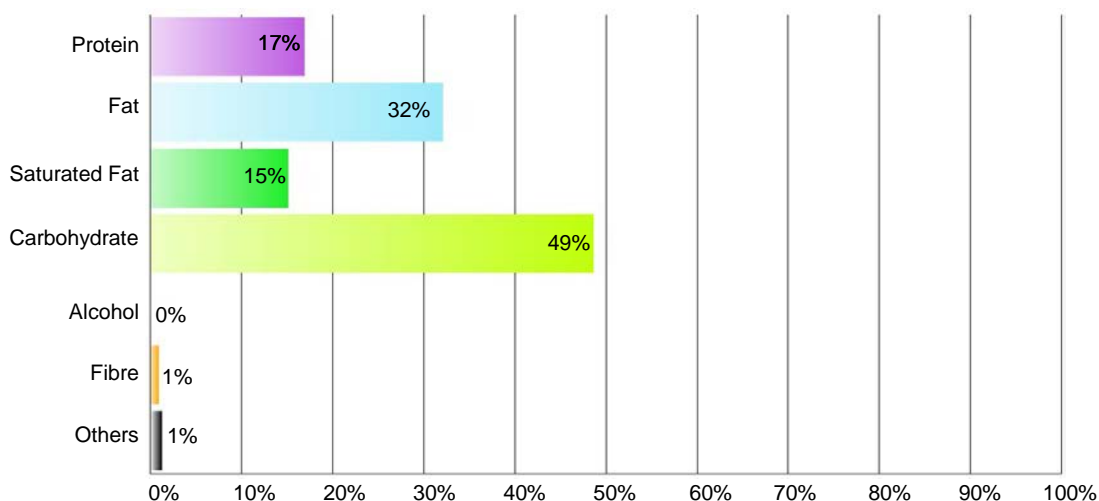
Data continues.

**Michael's Nutritional Profile (continued)**

**Estimated Average Requirement**

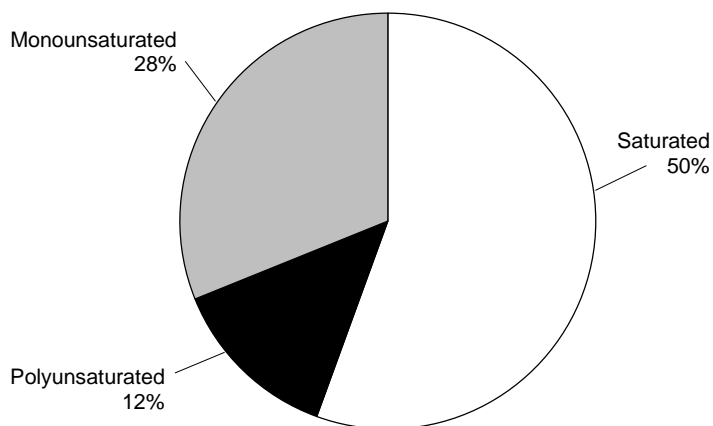


**Percentage Energy Derived from Protein, Fat, Carbohydrate, Alcohol**



**Fat Intake**

(percent Polyunsaturated, Monounsaturated, Saturated)



**Section A continues.**

**Section A (continued)**

**Question 8**

- (a) (i) Explain how Michael's overall energy intake and his energy ratios compare with the recommended energy intakes. (4 marks)

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- (ii) What macronutrients is Michael eating in excess? (2 marks)

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- (iii) What are the possible short term and long term consequences of Michael eating the nutrients listed in (ii) in excess? (4 marks)

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**Section A continues.**

**Section A (continued)**

- (b) Comment on Michael's intake of sodium and calcium, making reference to the UL of each. (2 marks)

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- (c) Explain how Michael's fat intake ratio differs from the nutritional recommendations. (3 marks)

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**SECTION B**

Answer **ALL** parts of this question.

Use your knowledge of nutrition and the information provided in Michael's Dietary Analysis to answer **Question 8** and **Question 9**.

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**Question 9**

Michael's daily diet includes 10 biscuits (4 x oatmeal, 4 x cheese, 2 x chocolate flavoured).  
One biscuit = one serve (25g)

Nutrients	Oatmeal biscuit	Cheese biscuit	Chocolate biscuit
Total fat	4.5g	6.7g	6.7g
- Sat fat	3.8g	1.8g	3.8g
Sodium	-	220mg	40mg
Carbohydrate	12.6g	13.1g	16g
- Sugar	6g	0.3g	11.2g
Dietary fibre	1.2g	0.7g	0.4g
Protein	1.5g	2.9g	1.2g
Energy - kJ's	401	528	543

- (a) (i) Using the information from the above table, compare the nutritional value of the **three** biscuits. (3 marks)

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- (ii) According to the above table, justify which biscuit is the 'most healthy' for Michael to be consuming. (1 mark)

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**Section B continues.**



**Section B (continued)**

- (ii) Suggest **three** specific different food swaps that Michael could make to reduce the number of biscuits he consumes per day. Provide nutritional reasons for these changes. (6 marks)

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- (b) Australian Dietary Guideline Number 3 states:

*‘Limit intake of foods containing saturated fat, added salt, added sugars and alcohol’.*

As a result of this, the guidelines suggest to limit discretionary food choices.

- (i) Define ‘discretionary food’ and provide a specific food example. How many kilojoules are in one serve of any discretionary food? (2 marks)

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- (ii) What is the maximum amount of discretionary foods that Michael should be consuming per day? (1 mark)

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**Section B (continued)**

- (iii) List **three** examples of discretionary foods from Michael's diet other than biscuits? Explain why each would be considered a discretionary food choice. (3 marks)

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- (iv) Michael's current diet includes no fruit and few vegetables. How many serves of fruit and how many serves of vegetables are recommended for Michael by the Australian Dietary Guidelines? (2 marks)

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- (v) What constitutes a serve of fruit and serve of vegetables in cups, pieces or size? (2 marks)

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# FOOD and NUTRITION

## (FDN315113)

Pages:	12
Questions:	3

## PART 3

Time: 30 minutes

### Candidate Instructions

1. You **MUST** make sure that your responses to the questions in this examination paper will show your achievement in the criteria being assessed.
2. This paper is divided into **TWO** sections.
3. Answer **ALL** questions in this part.
4. Answers must be written in the spaces provided on the examination paper.
5. It is recommended that you spend approximately 30 minutes in total answering the questions in this booklet.
6. All written responses must be in English.

On the basis of your performance in this examination, the examiners will provide results on each of the following criteria taken from the course statement:

**Criterion 6** Demonstrate knowledge and understanding of factors affecting food choice.

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**SECTION A**

Answer **ALL** questions in this section.

This section is worth **15 marks**.

It is recommended you spend approximately **15 minutes** on this section.

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**Question 10**

Our individual food choices are influenced by a wide variety of complex and inter-related factors.

(a) (i) There are **FOUR** major categories of factors that can affect food selection. Place the following on the table under the most appropriate category. (3 marks)

- Appetite
- Technology
- Allergies
- Satiety
- Beliefs
- Marketplace
- Tradition
- Hunger
- Occupation
- Level of physical activity
- Turgor
- Experiences
- Lifestyle
- Emotions

Social Factors	Physiological Factors	Economic Factors	Psychological Factors

(i) Explain how **two** of the factors from the table above may be inter-related. (2 marks)

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**Section A continues.**

**Section A (continued)**

**Question 11**

- (a) Choose a food item and provide a specific example under each heading as to why an individual may choose to eat that particular food. (4 marks)

Food Item Selected:
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Physiological Factors:
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Psychological Factors:
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Social Factors:
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Economic Factors:
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- (b) For each factor listed below, give **one** example of how it may affect an individual's food selection. (6 marks)

**Attitude:**

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**Media:**

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**Food Cost:**

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**Question 11 continues.**



**Question 11 (continued)**

**Habit:**

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**Self Concept:**

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**Colour of food:**

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**SECTION B**

Answer **ALL** questions in this section.

This section is worth **15 marks**.

It is recommended you spend approximately **15 minutes** on this section.

**Question 12**

Robert is a popular and confident Grade 12 student. He enjoys online gaming and spends most of his free time in front of the computer. His mum works evenings, so he and his brother, Jack make their own dinner. Snack foods, such as chips, chocolate bars, and ice cream are a part of their daily food intake. They eat a lot of pre-prepared microwavable frozen dinners.

Their sister Anna is a 15-year-old Grade 9 student. Anna spends much time on social media looking at the latest fashion trends and health and fitness advice. This leaves Anna feeling sad, anxious and inadequate. Comparing herself to these women, Anna decides to slim down by decreasing her food intake and engages in a vigorous exercise routine. She begins by cutting breakfast down to a glass of juice. For lunch she treats herself to a small biscuit and at dinner she cooks and eats a small portion of vegetables.

Jack, is a Grade 10 student. He has never enjoyed the taste and texture of pork, beef or poultry. After watching a video on Facebook, he decided that he would become a vegetarian. Jack does not like trying new foods. Every day for breakfast, he has toast with jam. He would like peanut butter, but is allergic to this. Jack is an athlete and excels at basketball, but usually eats junk food (McDonalds) with his best mate, Pavan after training and/or games.

Pavan was born in India but his family moved to Australia just after he was born. He enjoys eating junk food because at home his parents cook very authentic Indian dishes.

Identify factors affecting the food choices of Robert, Anna, Jack and Pavan. Provide examples of possible food choices in your answer.

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**Question 12 continues.**





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# FOOD and NUTRITION

## (FDN315113)

### PART 4

Pages:	8
Questions:	2

Time: 45 minutes

#### Candidate Instructions

1. You **MUST** make sure that your responses to the questions in this examination paper will show your achievement in the criteria being assessed.
2. Answer **ONE** question from this part.
3. You **MUST**:
  - Communicate ideas and information in the form of extended written expression.
  - Demonstrate knowledge and understanding of food related issues.
  - Respond using the form of extended written expression.
  - Use structured paragraphs and sentences, which must be written in a logical, coherent manner, using specialised terminology and appropriate English grammar. Candidates must provide clear and reasoned arguments supported by examples.
4. Answers must be written in the spaces provided on the examination paper.
5. You should make sure you answer all parts within each question so that the criterion can be assessed.
6. It is recommended that you spend approximately 45 minutes in total answering the questions in this booklet.
7. All written responses must be in English.

On the basis of your performance in this examination, the examiners will provide results on each of the following criteria taken from the course statement:

**Criterion 2** Communicate ideas and information in a variety of forms.

**Criterion 8** Demonstrate knowledge and understanding of food related issues.

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Answer: EITHER

Question 13

OR

Question 14

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### Question 13

A food secure world is one where all people have access to safe, nutritious and affordable food that provides the foundation for active and healthy lives. Food security affects more than human health and welfare – it also contributes to economic and political stability.

To meet the world's increasing demand for food, an anticipated 70% boost in global food production will be necessary by 2050.

Write an extended response that:

- Explains the term food security.
- Discusses how food insecurity can lead to both malnutrition and obesity in the same community.
- Discusses **three** inter-related factors that contribute to the complexity of food insecurity around the world today. Use examples.
- Explores **three** possible solutions to food security. Evaluate their potential advantages and disadvantages, using examples.

### Question 14

On average, humans consume 1.5-2kg of food on this planet daily. This often takes place with little realisation that the food that is so readily available is often produced at a large cost to the environment. As a result of this, food accounts for approximately 30% of the Australian ecological footprint. Therefore, it is paramount that our food production systems are ecologically sustainable.

Write an extended response that:

- Explains the term ecological sustainability.
- Discusses **three** environmental impacts and/ or issues in relation to the Australian food system. Use examples.
- Explains how a more sustainable food system can be created? Explore **three** possible solutions evaluating their potential advantages and disadvantages, using examples.











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