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books used

External assessment 2023

Question and response book

# Food & Nutrition

## Time allowed

- Perusal time — 10 minutes
- Working time — 120 minutes

## General instructions

- Answer all questions in this question and response book.
- Write using black or blue pen.
- Planning paper will not be marked.

## Section 1 (28 marks)

- 4 short response questions

## Section 2 (45 marks)

- 1 extended response question



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## Section 1

### Instructions

- If you need more space for a response, use the additional pages at the back of this book.
    - On the additional pages, write the question number you are responding to.
    - Cancel any incorrect response by ruling a single diagonal line through your work.
    - Write the page number of your alternative/additional response, i.e. See page ...
    - If you do not do this, your original response will be marked.
  - This section has four questions and is worth 28 marks.
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### QUESTION 1 (2 marks)

The Nutrient Profiling Scoring Criterion (NPSC) calculation for Break Fast, a new breakfast cereal, is shown.

Nutrition Profiling Scoring Criterion (NPSC) calculation		
Break Fast		
Category 2		
<b>Baseline points</b>		
Nutrient information	Amount entered	Points earned
Energy	1450	4
Saturated fatty acid	0.6	0
Sugars	62.8	10
Sodium	270	2
<b>Total baseline points</b>		<b>16</b>
<b>Modifying points</b>		
	Amount entered	Points earned
<i>fvl</i>	Non <i>fvl</i> ingredients	74%
	Non-concentrated <i>fvl</i> ingredients	0%
	Concentrated fruit and vegetable ingredients	26%
		1
Protein	9.5	0
Dietary fibre	15.1	5
<b>Total modifying points</b>		<b>6</b>
<b>Final score</b>		<b>10</b>

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Determine whether the health claim that the new Category 2 breakfast cereal, Break Fast, is 'a good source of fibre' is reasonable. Justify your response using the NPSC calculation.

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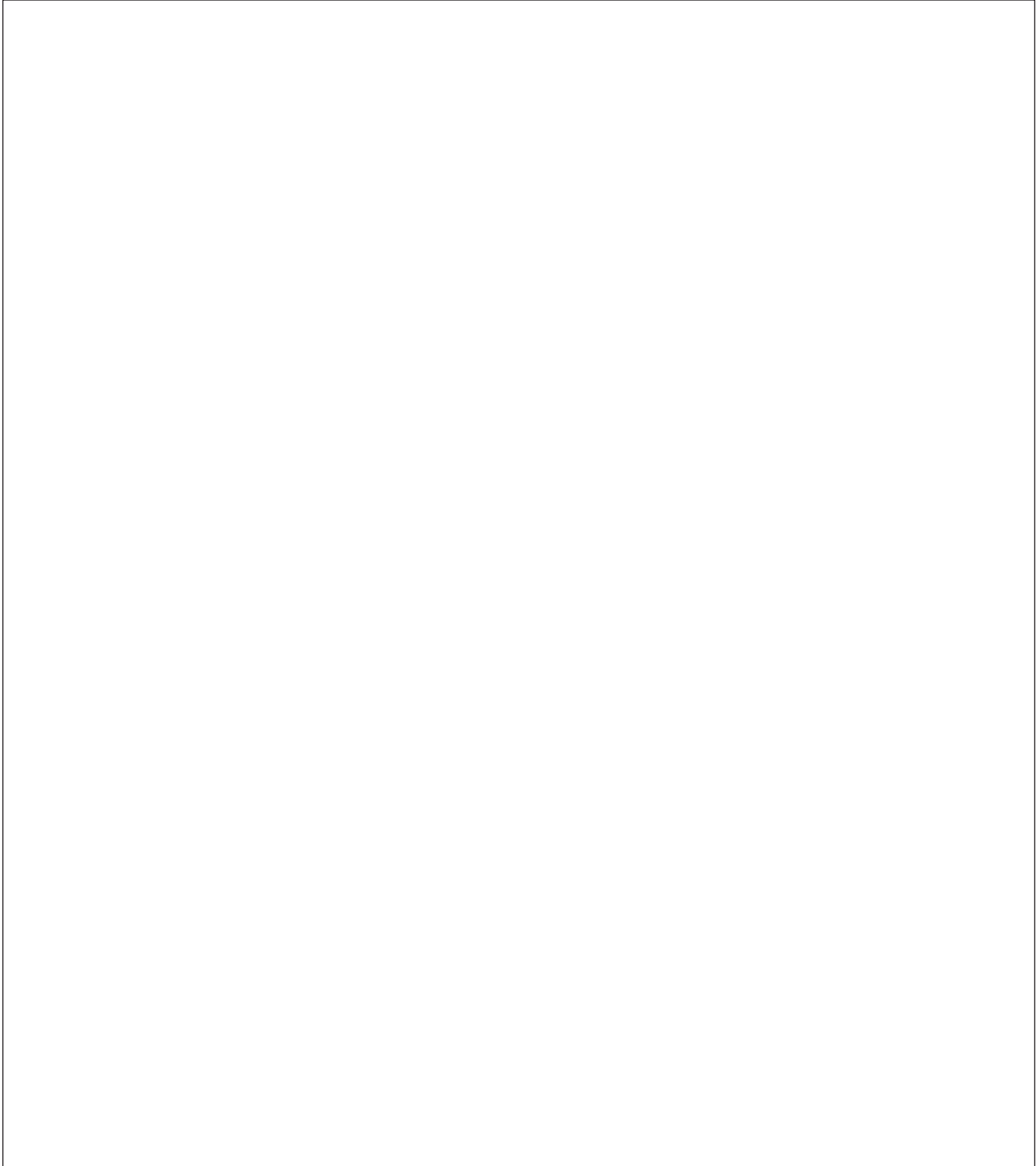
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## QUESTION 2 (10 marks)

Three formulations for lemon basil risotto and their sensory profiling are shown in Stimulus 1 in the stimulus book.

- a) Develop a graph to compare each formulation's sensory profile.

[4 marks]



**Note:** If you make a mistake in the graph, cancel it by ruling a single diagonal line through your work and use the additional response space at the back of this question and response book.

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### QUESTION 3 (9 marks)

The formulation and nutrition information panel (NIP) for Hawaiian pizza scrolls and the average recommended daily intake (RDI) for adults are shown.

Formulation 1: Hawaiian pizza scrolls																													
<p><b>Food components</b></p> <p>300 g self-raising flour            20 g caster sugar            60 g butter, chopped            160 mL milk            95 g tomato pizza sauce            100 g diced bacon            100 g sliced pepperoni            440 g can pineapple pieces            60 g baby spinach, shredded            165 g pizza cheese, grated</p>	<p><b>Nutrition information</b></p> <p>Servings per package: 10    Serving size: 100 g</p> <table border="1"> <thead> <tr> <th></th> <th>Average quantity per serving</th> <th>Average quantity per 100 g</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td>1230 kJ</td> <td>1230 kJ</td> </tr> <tr> <td>Protein</td> <td>14 g</td> <td>14 g</td> </tr> <tr> <td>Fat, total</td> <td>14.3 g</td> <td>14.3 g</td> </tr> <tr> <td>– saturated</td> <td>7.4 g</td> <td>7.4 g</td> </tr> <tr> <td>Carbohydrate</td> <td>25.7 g</td> <td>25.7 g</td> </tr> <tr> <td>– sugars</td> <td>7.4 g</td> <td>7.4 g</td> </tr> <tr> <td>Dietary fibre</td> <td>1.4 g</td> <td>1.4 g</td> </tr> <tr> <td>Sodium</td> <td>794 mg</td> <td>794 mg</td> </tr> </tbody> </table>			Average quantity per serving	Average quantity per 100 g	Energy	1230 kJ	1230 kJ	Protein	14 g	14 g	Fat, total	14.3 g	14.3 g	– saturated	7.4 g	7.4 g	Carbohydrate	25.7 g	25.7 g	– sugars	7.4 g	7.4 g	Dietary fibre	1.4 g	1.4 g	Sodium	794 mg	794 mg
	Average quantity per serving	Average quantity per 100 g																											
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– sugars	7.4 g	7.4 g																											
Dietary fibre	1.4 g	1.4 g																											
Sodium	794 mg	794 mg																											
<p><b>Average recommended daily intake (RDI) for adults</b></p> <table border="1"> <tbody> <tr> <td>Energy</td> <td>9900 kJ</td> </tr> <tr> <td>Protein</td> <td>130 g</td> </tr> <tr> <td>Fat, total</td> <td>88 g</td> </tr> <tr> <td>– saturated</td> <td>30 g</td> </tr> <tr> <td>Carbohydrate</td> <td>340 g</td> </tr> <tr> <td>– sugars</td> <td>59 g</td> </tr> <tr> <td>Dietary fibre</td> <td>25 g</td> </tr> <tr> <td>Sodium</td> <td>2000 mg</td> </tr> </tbody> </table>	Energy	9900 kJ	Protein	130 g	Fat, total	88 g	– saturated	30 g	Carbohydrate	340 g	– sugars	59 g	Dietary fibre	25 g	Sodium	2000 mg	<p><b><i>What is a snack?</i></b></p> <p>A snack is a small portion of food or drink, able to be packaged in individual serves.</p> <p>Australian nutritional advice suggests that a healthy snack contains 400–600 kilojoules.</p>												
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Protein	130 g																												
Fat, total	88 g																												
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Dietary fibre	25 g																												
Sodium	2000 mg																												

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a) Use this information to determine the nutritional benefits and risks for a consumer experiencing chronic heart disease (CHD) if they were to consume Formulation 1 every day.

*[4 marks]*

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Two alternative snack formulations are shown.

**Formulation 2: Raspberry smoothie balls**

**Food components**

- 105 g frozen raspberries, slightly thawed
- 90 g rolled oats
- 60 g shredded coconut
- 60 mL coconut oil
- 20 g sunflower seeds

**Nutrition information**

Servings per package: 9      Serving size: 37 g

	Average quantity per serving	Average quantity per 100 g
Energy	667 kJ	1800 kJ
Protein	2.2 g	5.9 g
Fat, total	13.0 g	35.1 g
– saturated	9.6 g	25.9 g
Carbohydrate	7.2 g	19.5 g
– sugars	1.3 g	3.5 g
Dietary fibre	2.7 g	7.3 g
Sodium	2 mg	5 mg

**Formulation 3: Coconut strawberry muffins**

**Food components**

- 35 g coconut flour
- 190 g self-raising flour
- 185 mL buttermilk
- 60 mL coconut oil
- 3 x 60 g eggs, lightly whisked
- 120 g apple puree
- 5 mL vanilla extract
- 250 g fresh strawberries, chopped
- 10 g flaked coconut

**Nutrition information**

Servings per package: 12      Serving size: 85 g

	Average quantity per serving	Average quantity per 100 g
Energy	666 kJ	784 kJ
Protein	4.8 g	5.6 g
Fat, total	7.7 g	9.1 g
– saturated	5.8 g	6.8 g
Carbohydrate	15.6 g	18.4 g
– sugars	4.1 g	4.8 g
Dietary fibre	2.1 g	2.5 g
Sodium	141 mg	166 mg

- b) Analyse Formulations 2 and 3 to decide which formulation would be better for a consumer experiencing CHD. Determine the nutritional benefits and risks of the selected formulation.

Justify the decision with data and information from the stimulus for Question 3a) and both formulations. Suggest modifications to your selected formulation if required. [5 marks]

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### QUESTION 4 (7 marks)

A delivery of food components to a company arrived with a combination of ordered and substituted ingredients. To avoid waste, the company wants to use the substituted food components and modify current formulations for the health-conscious nutrition consumer market (NCM).

Food components received		Stock on hand	
wholemeal self-raising flour	pecans	garlic	plain flour
eggs	sweet potato	potatoes	icing mixture
caster sugar	fresh beetroot	tinned tomatoes	cinnamon
cheddar cheese	butter	tinned pineapple	chicken stock cubes
spring onions	coconut yoghurt	tinned mushrooms	mixed herbs
low-fat almond milk	cocoa powder	wheat bran	salt and pepper
broccoli		custard powder	baking powder
		golden syrup	olive oil
		brown sugar	

#### Formulation 1: Zucchini and bacon slice

##### Food components

10 mL olive oil  
 150 g rindless smoked bacon, coarsely chopped  
 1 brown onion, finely chopped  
 2 x 60 g eggs  
 750 g self-raising flour  
 1.25 g bicarbonate of soda  
 125 mL thickened cream  
 300 g zucchini, coarsely grated  
 100 g Swiss-style cheese, coarsely grated

##### Procedure

1. Cook the bacon and onion in oil until bacon is crisp. Cool to room temperature.
2. Whisk the eggs. Add the flour and bicarbonate of soda. Stir until smooth.
3. Whisk in cream. Add zucchini, cheese, and bacon mixture. Stir. Pour mixture into pan.
4. Bake at 180 °C for 35 minutes.

#### Formulation 2: Carrot cake

##### Food components

450 g self-raising flour  
 300 g brown sugar  
 10 g mixed spice  
 240 g carrots, coarsely grated  
 90 g walnuts, chopped  
 4 x 60 g eggs, lightly whisked  
 375 mL vegetable oil  
 375 g cream cheese, softened  
 150 g pure icing sugar, sifted

##### Procedure

1. Combine flour, brown sugar and mixed spice. Add carrot, walnuts, egg and oil. Stir to combine. Pour mixture into cake tin.
2. Bake at 180 °C for 40–45 minutes. Cool to room temperature.
3. Beat the cream cheese and icing sugar until creamy. Spread over cooled cake.

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Analyse the information provided to identify the best formulation to modify using the substitute food components. List the original food components and substitutes. Justify your choice of substitutions, referring to the NCM and possible sensory profiling.

Chosen formulation: \_\_\_\_\_

	Original food component	Substituted food component
1.		
2.		
3.		

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## Section 2

### Instructions

- Read Stimulus 2 in the stimulus book.
  - Respond in paragraphs consisting of full sentences.
  - Respond in 400 words or more.
  - This section has one question and is worth 45 marks.
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### QUESTION 5 (45 marks)

A food company provides a range of delicious, nutritionally balanced foods developed by dietitians and prepared by chefs. It produces multiple product lines designed for different nutrition consumer markets. Market research has identified the opportunity to develop a product suitable for pregnant vegan consumers.

Use the problem-solving process and the test kitchen report from Stimulus 2 to determine which prototype is most suitable for this nutrition consumer market.

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## References

Formulation 1: Coles Magazine, 'Hawaiian pizza scrolls', *Taste.com.au*,  
[www.taste.com.au/recipes/hawaiian-pizza-scrolls-2/42b4ce4a-238f-41fa-84f9-fe827bad5bb6](http://www.taste.com.au/recipes/hawaiian-pizza-scrolls-2/42b4ce4a-238f-41fa-84f9-fe827bad5bb6)

Formulation 2: Coles Magazine, 'Raspberry smoothie bliss balls', *Taste.com.au*,  
[www.taste.com.au/recipes/raspberry-smoothie-balls/qksiybbo](http://www.taste.com.au/recipes/raspberry-smoothie-balls/qksiybbo)

Formulation 3: Knudsen, K, 'Healthier coconut and strawberry muffins', *Taste.com.au*,  
[www.taste.com.au/recipes/healthier-coconut-strawberry-muffins/htrq18bh](http://www.taste.com.au/recipes/healthier-coconut-strawberry-muffins/htrq18bh)



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