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School code

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Book

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of

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books used

External assessment 2022

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.
- Respond in paragraphs consisting of full sentences.
- Planning paper will not be marked.

Section 1 (25 marks)

- 4 short response questions

Section 2 (41 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 25 marks.
-

QUESTION 1 (4 marks)

a) Define the term *food formulation*.

[1 mark]

b) Explain how and why a formulation would be reformulated.

[3 marks]

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QUESTION 2 (5 marks)

Read the case study.

Case study: A consumer bought a pre-prepared meal from a supermarket, reheated it at home and ate it. Soon after, they reported the following symptoms: dizziness, an itchy throat and swelling of the face and lips. The ingredients in the meal were listed as coconut milk, prawns, fish stock, lemon juice, onion, garlic, peanuts, cashews, broccoli, wheat flour and olive oil.

- a) Identify four allergens in the formulation that could have caused the symptoms reported. [2 marks]

- b) Explain the responsibility of the food manufacturer and the responsibility of the consumer in this situation. [2 marks]

Food manufacturer's responsibility: _____

Food consumer's responsibility: _____

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c) Name the regulatory body responsible for food regulations in Australia.

[1 mark]

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QUESTION 3 (9 marks)

The ingredient lists and nutrition information panels for four food prototypes suitable for an infant (12 months of age or younger) are shown.

Bacon and egg muffins		
Ingredients: Egg, bacon, cheese, milk, mushrooms, broccoli, baby spinach		
Nutrition information Servings per package: 6 Serving size: 120 g		
	Average quantity per serving	Average quantity per 100 g
Energy	699 kJ	583 kJ
Protein	15.4 g	12.8 g
Fat, total – saturated	11.2 g 5.0 g	9.3 g 4.2 g
Carbohydrate – sugars	1.0 g 0.9 g	0.8 g 0.8 g
Dietary fibre	3.2 g	2.7 g
Sodium	568 mg	473 mg
Calcium	136 mg	113 mg

Tuna patties		
Ingredients: Tuna, breadcrumbs, wholemeal flour, sweet potato, parmesan, egg, garlic, milk, parsley		
Nutrition information Servings per package: 5 Serving size: 120 g		
	Average quantity per serving	Average quantity per 100 g
Energy	681 kJ	568 kJ
Protein	11.6 g	9.7 g
Fat, total – saturated	2.9 g 1.2 g	2.4 g 1.0 g
Carbohydrate – sugars	20.8 g 4.8 g	17.3 g 4.0 g
Dietary fibre	0.8 g	0.7 g
Sodium	255 mg	213 mg
Calcium	97 mg	81 mg

Mild curried meatballs		
Ingredients: Potato, carrot, peas, curry powder, baby spinach, parsley, tomato sauce, egg, beef mince		
Nutrition information Servings per package: 15 Serving size: 120 g		
	Average quantity per serving	Average quantity per 100 g
Energy	1990 kJ	1660 kJ
Protein	13.3 g	11.1 g
Fat, total – saturated	26.2 g 10.7 g	21.8 g 8.9 g
Carbohydrate – sugars	45.0 g 8.2 g	37.5 g 6.8 g
Dietary fibre	1.5 g	1.3 g
Sodium	375 mg	313 mg
Calcium	7.7 mg	6.4 mg

Mini zucchini frittatas		
Ingredients: Zucchini, tomatoes, egg, sweet potato, onion, low-salt feta, tomato paste, basil, baby spinach, maple syrup, olive oil		
Nutrition information Servings per package: 10 Serving size: 120 g		
	Average quantity per serving	Average quantity per 100 g
Energy	575 kJ	479 kJ
Protein	6.3 g	5.3 g
Fat, total – saturated	6.2 g 2.3 g	5.2 g 1.9 g
Carbohydrate – sugars	25.9 g 12.4 g	21.6 g 10.3 g
Dietary fibre	4.4 g	3.7 g
Sodium	138 mg	115 mg
Calcium	92 mg	77 mg

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a) Using each prototype only once, determine their category.

[2 marks]

High in fat: _____

High in sugar: _____

High in salt: _____

Low in fibre: _____

b) Decide which prototype would be the best option to feed an infant. Justify your answer using data in the nutrition information panels.

[3 marks]

c) Choose a different prototype from the one selected in Question 3b) and explain two changes you could make to the formulation to better meet the needs of the infant nutrition consumer market. Justify each change with data from the nutrition information panels.

[4 marks]

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QUESTION 4 (7 marks)

A health food company has formulated a new frozen prototype to suit the nutrition needs for a consumer experiencing chronic heart disease. The food formulation and nutrition information are shown.

Frozen chicken burritos																													
<p>Food components</p> <p>10 g cumin 10 g smoked paprika 10 g ground coriander 300 g chicken thighs 40 mL coconut oil 225 g brown onion, diced 2 garlic cloves, diced 150 g kidney beans, drained 200 g white rice, cooked 150 g tomatoes, diced 100 g fresh coriander, washed, dried, leaves and stems chopped 40 mL lime juice 150 g cheddar cheese, grated 4 flour tortillas Sour cream, to serve</p>	<p>Procedure</p> <ol style="list-style-type: none"> Place spices in a bowl and combine thoroughly. Rub mixture onto chicken thighs. Heat half the oil in a frying pan. Cook the chicken, allow to cool, then shred. Heat remaining oil in pan, add onion and one diced garlic clove and fry until cooked. Add kidney beans, rice and chicken. Combine diced tomatoes and second diced garlic clove with fresh coriander and lime juice. Place evenly divided chicken mixture on tortillas. Top with salsa and cheese. Wrap firmly before packaging for freezer. When ready to eat burrito, heat for 5 minutes in microwave then serve with sour cream. 																												
<p>Nutrition information</p> <p>Servings per package: 4 Serving size: 362.5 g</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;"></th> <th style="width: 35%; text-align: center;">Average quantity per serving</th> <th style="width: 35%; text-align: center;">Average quantity per 100 g</th> </tr> </thead> <tbody> <tr> <td>Energy</td> <td style="text-align: center;">3340 kJ</td> <td style="text-align: center;">921 kJ</td> </tr> <tr> <td>Protein</td> <td style="text-align: center;">35.1 g</td> <td style="text-align: center;">9.7 g</td> </tr> <tr> <td>Fat, total</td> <td style="text-align: center;">41.6 g</td> <td style="text-align: center;">11.5 g</td> </tr> <tr> <td>– saturated</td> <td style="text-align: center;">17.3 g</td> <td style="text-align: center;">4.8 g</td> </tr> <tr> <td>Carbohydrate</td> <td style="text-align: center;">65.5 g</td> <td style="text-align: center;">18.1 g</td> </tr> <tr> <td>– sugars</td> <td style="text-align: center;">7.6 g</td> <td style="text-align: center;">2.1 g</td> </tr> <tr> <td>Dietary fibre</td> <td style="text-align: center;">16.6 g</td> <td style="text-align: center;">4.6 g</td> </tr> <tr> <td>Sodium</td> <td style="text-align: center;">778 mg</td> <td style="text-align: center;">215 mg</td> </tr> </tbody> </table>		Average quantity per serving	Average quantity per 100 g	Energy	3340 kJ	921 kJ	Protein	35.1 g	9.7 g	Fat, total	41.6 g	11.5 g	– saturated	17.3 g	4.8 g	Carbohydrate	65.5 g	18.1 g	– sugars	7.6 g	2.1 g	Dietary fibre	16.6 g	4.6 g	Sodium	778 mg	215 mg	<p>Substitute food components</p> <p>Protein chicken breast, low-salt kidney beans, beef mince, low-fat yoghurt, canned lentils, low-fat cheddar</p> <p>Fat palm oil, safflower oil, olive oil, lard, sunflower oil, butter</p> <p>Carbohydrate wholemeal tortilla, penne pasta, wholemeal rice, potato, basmati rice, lasagne sheets</p>	
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Sodium	778 mg	215 mg																											

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Australian food standards — nutrient claim conditions

Nutrient	Claim	Claim conditions	
Energy	Low	170 kJ per 100 g solid food	80 kJ per 100 mL liquid
Protein	Claim Good source	5 g per serving 10 g per serving	
Fat	Low	3 g per 100 g solid food	1.5 g per 100 mL liquid
Saturated fat	Low	1.5 g per 100 g solid food	0.75 g per 100 mL liquid
Sugar	Low	5 g per 100 g solid food	2.5 g per 100 mL liquid
Dietary fibre	Claim Good source Excellent source	2 g per serving 4 g per serving 7 g per serving	
Sodium	Low	120 mg per 100 g solid food	120 mg per 100 mL liquid

- a) Review the procedure and identify one section that could be altered to make the formulation better meet the needs of a consumer experiencing chronic heart disease. Justify your decision.

[2 marks]

- b) Choose two food components from the substitute food components list to reformulate this prototype for a consumer experiencing chronic heart disease. Justify each chosen substitute food component using the data provided.

[5 marks]

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Section 2

Instructions

- Read Stimulus 1 in the stimulus book.
 - Respond in 400 words or more.
 - This section has one question and is worth 41 marks.
-

QUESTION 5 (41 marks)

A food company that provides meals for elderly consumers in an aged care facility has had several complaints about its fish curry, a meal choice served weekly. The company has gathered data relevant to the issues around this product. The results of the testing are outlined in the test kitchen report from Stimulus 1. Use the problem-solving process to determine the best possible solution for the food company to provide a suitable alternative formulation to replace the fish curry in its dinner options.

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References

Question 4

Data sourced from Food Standards Australia New Zealand (FSANZ), Schedule 4, available at:
www.foodstandards.gov.au/code/Documents/Sched%204%20Nutrition%20and%20health%20claims%20v159.pdf



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