



Advanced GCE

**HOME ECONOMICS (FOOD, NUTRITION  
AND HEALTH)**
**G004**

Unit G004: Nutrition and Food Production

**Specimen Paper**

Time: 1 hour 30 minutes

Additional Materials Additional answer paper may be required

Candidate  
Name
Centre  
Number




Candidate  
Number



**INSTRUCTIONS TO CANDIDATES**

- Write your name, Centre number and Candidate number in the spaces provided

There are two sections in this paper.

**Section A 25 marks**

Answer question 1

**Section B 50 marks**Answer **two** questions only

Write your answers, in blue or black ink in the spaces on the question paper.

Read each question carefully and make sure you know what you have to do before starting your answer.

**INFORMATION FOR CANDIDATES**

- The number of marks for each question is given in brackets [ ] at the end of each question or part of question.
- The total number of marks for this paper is 75.
- **You will be awarded marks for the quality of your written communication in your answers to the questions in Section B.**

For Examiner's Use	
Section A	
Section B	
Total	

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(d) Fortified foods have nutrients added during processing. Explain **two** reasons why foods are fortified.

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..... [4]

(e) Identify and explain **three** nutritional needs of young children.

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Section A Total [25]

4

**Section B**

Answer **two** questions only.

The quality of written communication will be assessed in your answers to the questions in Section B.

- 2** A biscuit making company is concerned about a fall in sales. The managing director has asked the product development team to design and develop a new biscuit that will meet consumer needs and extend the range of biscuits already available,

Explain the process of design and product development used in the production of a new biscuit. [25]

- 3** Much of the appeal of fruit and vegetables lies in their colour, texture and taste. The health benefits of eating fruit and vegetables are important too. Many different types and varieties are grown worldwide offering a great choice to the consumer.

Discuss the choice, use and nutritional value of fruit and vegetables in the diet. [25]

- 4** Food choice is shaped by developments in technology, social and cultural changes and environmental and moral concerns.

Discuss the developments in the range and type of products available for consumption. [25]

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12  
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OXFORD CAMBRIDGE AND RSA EXAMINATIONS

Advanced GCE

**HOME ECONOMICS (FOOD, NUTRITION AND HEALTH) AND G004**

Unit G004: Nutrition and Food Production

**Specimen Mark Scheme**

The maximum mark for this paper is 75.

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Section A		
Question Number	Answer	Max Mark
1(a)	<p><b>Energy rich foods are important in the diet.</b>  <b>Name three foods that are good sources of energy.</b>            One mark is available for each correctly identified source.            Answers may include:</p> <ul style="list-style-type: none"> <li>• Fats e.g. butter, margarine, suet and lard.</li> <li>• Oils.</li> <li>• Fatty foods.</li> <li>• Sugar and sugar rich foods.</li> <li>• Processed foods e.g. pizzas, pies.</li> </ul> <p>Credit will be given for all valid points.</p>	[3]
1(b)	<p><b>Describe three factors that may affect an individual's energy requirement.</b>            One mark is available for each correctly identified factor.            One mark for a description of how the factor may affect energy consumption.</p> <p>Answers may include:</p> <ul style="list-style-type: none"> <li>• Age.</li> <li>• Size/gender.</li> <li>• Occupation.</li> <li>• Pregnancy and lactation.</li> <li>• Hormonal imbalance.</li> <li>• Environmental conditions.</li> </ul> <p>Credit will be given for all valid points.</p>	[6]
1(c)	<p><b>Explain the effect of energy imbalance in the diet.</b></p> <p><b>High 5-6</b>            Candidates are able to explain the effect of energy imbalance in the diet in detail. The explanation will be well developed and could be supported by the use of subject specific examples. Ideas will be expressed clearly and fluently. There will be few, if any, errors of grammar, punctuation or spelling.</p> <p><b>Middle 3-4</b>            Candidates are able to explain satisfactorily the effect of energy imbalance in the diet. The explanation may not be fully developed and may lack specific examples. There may be occasional errors of grammar, punctuation or spelling.</p> <p><b>Low 0-2</b>            Candidates are able to explain superficially the effect of energy imbalance in the diet. The explanation may be poorly expressed and errors of grammar, punctuation and spelling will be intrusive.</p>	

Section A		
Question Number	Answer	Max Mark
1(c) cont'd	<p>Answers may include:</p> <ul style="list-style-type: none"> <li>• Body weight is affected by energy intake and expenditure. Extra energy is stored as fat in the body.</li> <li>• If a person regularly consumes more energy than they use up, they will start to gain weight and eventually become overweight or obese.</li> <li>• Obesity is a condition in which excessive fat accumulation in adipose tissue impairs health. In adults it is a body mass index (BMI) above 30.</li> <li>• Obesity can cause a shorter life expectancy, greater risk of developing coronary heart disease, gall bladder disease, hypertension, type 2 diabetes and some cancers.</li> <li>• If a person regularly consumes less energy than required they will lose weight. If a person regularly consumes less energy than they use up they will lose weight. An inadequate energy intake over a period of time can result in malnutrition.</li> </ul> <p>Credit will be given for all valid points.</p>	[6]
1(d)	<p><b>Fortified foods have nutrients added during processing. Explain two reasons why foods are fortified.</b></p> <p>One mark is available for identifying a reason for fortifying food. One mark is for available an explanation of the reason why foods are fortified.</p> <p><b>Restore nutrition.</b> Important nutrients are lost during processing so must be restored e.g. by law in the UK, iron, thiamine and niacin must be added back to white and brown flour.</p> <p><b>Provide alterative choice.</b> To produce a substitute product with similar nutritive value. In the UK it is compulsory by law that margarine has vitamins A and D added to levels comparable with butter.</p> <p><b>To reduce deficiency diseases.</b> Nutrients may be added to foods irrespective of whether or not the nutrients are originally present in the food to help prevent disease.</p> <p><b>To offer technical benefit.</b> Vitamin C is an antioxidant and can reduce the rate of spoilage in some products.</p> <p><b>To cater for special nutritional needs.</b> Meal replacements, sports drinks, slimming products, and foods aimed at particular groups, are often fortified making an important contribution to the diet of people who eat them.</p> <p><b>To make a marketing claim.</b> It provides the food manufacturer with an opportunity to make a claim, which may help to sell a product.</p>	[4]

Section A		
Question Number	Answer	Max Mark
1(e)	<p><b>Identify and explain three nutritional needs of young children.</b></p> <p>One mark for identifying the nutritional need. One mark for the explanation.</p> <p>Answers may include: Nutritional needs of young children can be divided into groups:</p> <p><b>4 to 6 years.</b></p> <ul style="list-style-type: none"> <li>• Energy requirements increase for growth.</li> <li>• Protein requirement increase for growth of cells.</li> <li>• All the vitamins (except C and D) increase for energy release.</li> <li>• All the minerals (except iron) increase. Calcium is essential for bone development.</li> <li>• The requirement for vitamin C remains the same as for younger children.</li> </ul> <p><b>7 to 10 years.</b></p> <ul style="list-style-type: none"> <li>• There is an increase in requirements for energy and protein for growth.</li> <li>• No changes in the requirement for thiamine, vitamin C or vitamin A, but the requirements for the other vitamins and minerals are increased.</li> </ul> <p>Credit will be given for all valid points.</p>	[6]
<b>Section A Total</b>		<b>[25]</b>
Section B		
2	<p><b>A biscuit making company is concerned about a fall in sales. The managing director has asked the product development team to design and develop a new biscuit that will meet consumer needs and extend the range of biscuits already available.</b></p> <p><b>Explain the process of design and product development used in the production of a new biscuit.</b></p> <p><b>High 18-25</b> The candidates are able to explain clearly the process of design and product development. They should show a very good level of understanding. The information will be presented in a fluent and well-structured manner. Subject specific terminology will be used accurately. There will be few, if any, errors of grammar, punctuation and spelling.</p> <p><b>Middle 10-17</b> The candidates are able to explain satisfactorily the process of design and product development. They should show a good level of understanding. The information will be well presented and some subject specific terminology will be used. There may be occasional errors of grammar, punctuation and spelling.</p>	



Section B		
Question Number	Answer	Max Mark
2 cont'd	<p><b>Low 0-9</b></p> <p>The candidates are able to explain superficially the process of design and product development. They may show limited understanding. The information will be poorly expressed and limited subject specific terminology will be used. Errors of grammar, punctuation and spelling may be intrusive.</p> <p>Answers may include:</p> <p>Concept generation</p> <ul style="list-style-type: none"> <li>Identifying a gap in the market.</li> <li>Research of existing products.</li> <li>Development of product profile.</li> <li>Possibilities explored and development of a design specification.</li> </ul> <p>Concept screening</p> <ul style="list-style-type: none"> <li>The rejection of ideas</li> </ul> <p>Testing and trialling</p> <ul style="list-style-type: none"> <li>Development of prototypes including sensory tests, nutritional analysis and costing before piloting small trials.</li> </ul> <p>Development and modelling</p> <ul style="list-style-type: none"> <li>Production trials and small-scale bench work to reproduce the product cost effectively.</li> <li>Production of a manufacturing specification.</li> <li>HACCP and quality control systems established.</li> </ul> <p>Packaging and labelling</p> <ul style="list-style-type: none"> <li>Ideas for packaging will also be explored.</li> <li>Pricing the product for the marketplace.</li> <li>The organisation of a distribution system for the product.</li> </ul> <p>Advertising and launch</p> <ul style="list-style-type: none"> <li>Various methods including special tasting inside the supermarket, money off coupons, trial size samples, preferential shelf positioning etc.</li> </ul> <p>Credit will be given for all valid points.</p>	[25]

Section B		
Question Number	Answer	Max Mark
3	<p><b>Much of the appeal of fruit and vegetables is their colour, texture and taste. The health benefits are important too. Many different types and varieties are grown worldwide offering a greater choice to the consumer.</b></p> <p><b>Discuss the choice, use and nutritional value of fruit and vegetables in the diet.</b></p> <p><b>High 18-25</b> The candidates are able to discuss clearly the choice, use and nutritional value of fruit and vegetables in the diet. They should show a detailed level of understanding. The information will be presented in a fluent and well-structured manner. Subject specific terminology will be used accurately. There will be few, if any errors of grammar, punctuation and spelling.</p> <p><b>Middle 10-17</b> The candidates are able to discuss satisfactorily the choice, use and nutritional value of fruit and vegetables in the diet. They should show a reasonable level of understanding. The information will be well presented and some subject specific terminology will be used. There may be occasional errors of grammar, punctuation and spelling.</p> <p><b>Low 0-9</b> The candidates are able to demonstrate a superficial understanding of the choice, use and nutritional value of fruit and vegetables in the diet. The discussion will be generalised. The information will be poorly expressed and limited subject specific terminology will be used. Errors of grammar, punctuation and spelling may be intrusive.</p> <p>Answers may include:</p> <p><b>Choice</b></p> <ul style="list-style-type: none"> <li>• Fruit and vegetables are grown all over the world. The choice available is not restricted to the season.</li> <li>• The type of product available has increased e.g. organic, Fairtrade products.</li> <li>• Choice of processed products – canning, dehydration or freezing.</li> <li>• Ready prepared and washed products are available.</li> <li>• Some consumers, due to limited income, may not have access to the wide choice of fruit and vegetables available.</li> <li>• The highest quality products have the best nutritive value.</li> </ul>	

Section B		
Question Number	Answer	Max Mark
3 cont'd	<p><b>Use</b></p> <ul style="list-style-type: none"> <li>• Fruit and vegetables contribute texture, colour and flavour to the diet e.g. colour can make dishes look attractive e.g. fruit salad.</li> <li>• Fruit and vegetables can add contrasts in flavour e.g. sweet and sour</li> <li>• Some freshly cut fruit and vegetables will brown.</li> <li>• Products should be used at their best to ensure the highest nutritive value.</li> <li>• Blanching may be necessary in preparation for freezing.</li> </ul> <p><b>Nutritional value.</b></p> <ul style="list-style-type: none"> <li>• Fruit and vegetables include rich sources of a number of nutrients, e.g. water, carbohydrates, vitamin C, folic acid, dietary fibre/NSP, beta-carotene and potassium. Calcium and iron are found in variable amounts. Fruit and vegetables also provide small amounts of protein and B vitamins.</li> <li>• Generally, fruit and vegetables are low fat and low energy foods.</li> <li>• At least five portions of fruit or vegetables should be consumed daily.</li> <li>• Commercial processing methods can reduce nutritional value.</li> <li>• Steps can be taken to conserve vitamin content during the food preparation.</li> </ul> <p>Credit will be given for all valid points.</p>	[25]
4	<p><b>Food choice is shaped by developments in technology, social and cultural changes and environmental and moral concerns.</b></p> <p><b>Discuss the developments in the range and type of products available for consumption.</b></p> <p><b>High 18-25</b> The candidates are able to discuss clearly the developments in the range and type of products available for consumption. The information will be presented in a fluent and well-structured manner. Subject specific terminology will be used accurately. There will be few, if any, errors of grammar, punctuation and spelling.</p> <p><b>Middle 10-17</b> The candidates are able to discuss satisfactorily the developments in the range and type of products available for consumption. The information will be well presented and some subject specific terminology will be used. There may be occasional errors of grammar, punctuation and spelling.</p> <p><b>Low 0-9</b> The candidates are able discuss superficially the developments in the range and type of products available for consumption. The information will be poorly expressed and limited subject specific terminology will be used. Errors of grammar, punctuation and spelling may be intrusive.</p>	
Section B		

Question Number	Answer	Max Mark
<p><b>4</b> <b>cont'd</b></p>	<p>Answers may include:</p> <p><b>Range and types</b></p> <ul style="list-style-type: none"> <li>• Technological developments mean that there is a wide range of food products available e.g. transport systems, food additives.</li> <li>• On line food shopping offers access to a greater range and type of product.</li> <li>• Travel abroad raises awareness of different cultures and demand for supplies of these products.</li> <li>• Increased range of convenience foods e.g. cooks' chill meals.</li> <li>• More choice of price available within one product range e.g. value brands.</li> <li>• Smaller household's e.g. more types of single portion foods.</li> <li>• Many households have microwaves/bread makers.</li> <li>• Busier lifestyles more 'food to go' and ready to eat products e.g. ready prepared salad, hot roasted chicken.</li> <li>• More choice of products that reflect a lack of time to prepare meals e.g. Part baked and pre-prepared products, mixes, sauces.</li> <li>• More range and choice for those with special dietary needs e.g. gluten free.</li> <li>• Choice of purchasing local produce increasingly popular.</li> <li>• Concern about production methods increased range of organic, Fairtrade products and non-genetically modified foods.</li> <li>• New types of fortified food products e.g. snack bars.</li> <li>• Healthy ranges of products increased due to Health of the Nation e.g. low cholesterol.</li> <li>• Smart foods and Functional foods e.g. Benecol.</li> <li>• Food additives increase choice yet concerns about them have led to additive free products being available.</li> </ul> <p>Credit will be given for all valid points.</p>	<p>[25]</p>
<b>Section B Total</b>		<b>[50]</b>
<b>Paper Total</b>		<b>[75]</b>

## Assessment Objectives Grid (includes QWC)

Question	AO1	AO2	AO3	Total
<b>Section A</b>				
<b>1(a)</b>	3	0	0	<b>3</b>
<b>1(b)</b>	3	3	0	<b>6</b>
<b>1(c)</b>	0	6	0	<b>6</b>
<b>1(d)</b>	2	2	0	<b>4</b>
<b>1(e)</b>	3	3	0	<b>6</b>
<b>Section B*</b>				
<b>2/3/4</b>	5*	10*	10*	<b>25</b>
<b>2/3/4</b>	5*	10*	10*	<b>25</b>
<b>Totals</b>	<b>21</b>	<b>34</b>	<b>20</b>	<b>75</b>

\* Candidates answer two out of three questions from Section B.

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