

**GCE**

**Home Economics (Food, Nutrition and Health)**

Unit **G004**: Nutrition and Food Production

Advanced GCE

**Mark Scheme for June 2017**

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of candidates of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, Cambridge Nationals, Cambridge Technicals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

It is also responsible for developing new specifications to meet national requirements and the needs of students and teachers. OCR is a not-for-profit organisation; any surplus made is invested back into the establishment to help towards the development of qualifications and support, which keep pace with the changing needs of today's society.

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

© OCR 2017

These are the annotations, (including abbreviations), including those used in scoris, which are used when marking

Annotation	Meaning
	Blank Page – this annotation <b>must</b> be used on all blank pages within an answer booklet (structured or unstructured) and on each page of an additional object where there is no candidate response.
	Unclear
	Benefit of doubt
	Caret sign to show omission
	Not answered question
	Repeat
	Noted but no credit given
	Tick
	Cross
	Level 1
	Level 2
	Level 3
	Level 4
	Vague

## MARK SCHEME: Nutrition and Food Production (A2)

Question			Answer/Indicative content	Mark	Guidance
1	a	i	<p>Name <b>two</b> cooking oils.</p> <p><b>Sources:</b></p> <ul style="list-style-type: none"> <li>• Coconut</li> <li>• Corn</li> <li>• Cottonseed</li> <li>• Olive</li> <li>• Palm</li> <li>• Peanut/hazelnut/walnut</li> <li>• Rapeseed/canola</li> <li>• Sesame</li> <li>• Soybean</li> <li>• Sunflower</li> </ul> <p><b>Credit will be given for all valid points.</b></p>	2	<p><b>TWO MARKS</b> available for correct answers.</p> <p>No vegetable oils accepted</p>
1	a	ii	<p>Describe <b>three</b> advantages of fats and oils in the diet.</p> <ul style="list-style-type: none"> <li>• Provides a source of energy (each gram of fat has nine calories) (1) protein sparer (1)</li> <li>• Keeps the body warm (1) chemical reactions using energy from fat in the body to produce heat (1)</li> <li>• Protects internal organs (1) such as the kidneys (1) by surrounding them with a layer of fat/barrier (1)</li> <li>• Needed for essential components in the body (1) cell membranes (1) sex hormone production (1) nerve fibres (1).</li> <li>• Provides a source for the fat-soluble vitamins (A, D, E and K) (1) deficient in one or more of these vitamins (1) helps maintain healthy hair and skin (1)</li> <li>• Provides essential fatty acids/omega 3 &amp; 6 (1) brain function (1)</li> <li>• Delays gastric emptying (1) feel fuller longer (1)</li> <li>• Fat is an insulator/decreases rate of thermal loss(1) provides warmth (1) maintain the proper body</li> </ul>	6	<p><b>TWO MARKS</b> available for answers describing a clear advantage. <b>THREE</b> required. <b>ONE MARK</b> <u>for a statement only</u> and no description.</p> <p>Accept function of vitamin as a separate point</p> <p>Accept function of omega 3 &amp; 6 as a separate point</p>

Question			Answer/Indicative content	Mark	Guidance
			temperature (1) <ul style="list-style-type: none"> <li>Creates fatty (adipose) tissue (1) long term energy store (1).</li> <li>Enhances the aesthetics of food (1) Adds flavour (1)</li> </ul> <b>Credit will be given for all valid points.</b>		
1	a	iii	Explain the process of hydrogenation on cooking oils.  <ul style="list-style-type: none"> <li>Oils are <b>hardened/solid</b> using <b>hydrogen/hydrogen gas</b> (1)</li> <li>Unsaturated fats can be made into saturated fats/Double bonds are changed to single bonds (1)</li> </ul>	2	<b>TWO MARKS</b> available for answers with a clear explanation. <b>ONE MARK</b> for a brief response.
1	b		Describe the function of folic acid in the diet.  <ul style="list-style-type: none"> <li>Important during pregnancy/preconceptual health (1) the development of the spinal cord in the embryo (1) prevents 'neural tube defects'/spina bifida (1)</li> <li>Folic acid (with vitamin B12) is essential for the formation of red blood cells/haemoglobin (1) deficiency of folic acid can cause a type of anaemia (1)</li> <li>Helps nerves/nervous system/brain to function properly (1) linked to poor cognitive function/higher risk of dementia (1)</li> <li>Folic acid is also essential for the formation of DNA within every body cell (1) allowing each cell to replicate perfectly (1).</li> </ul>	2	<b>TWO MARKS</b> available for answers with a clear description. <b>ONE MARK</b> for a brief response. Two marks for two brief functions.

Question			Answer/Indicative content	Mark	Guidance
1	c	i	Identify <b>two</b> good food sources of vitamin E. <ul style="list-style-type: none"> <li>• Wheat germ/whole grain products</li> <li>• Soybean oil/olive oil/corn oil</li> <li>• Sunflower seeds/oil</li> <li>• Egg yolk/eggs</li> <li>• Salmon</li> <li>• Prawns</li> <li>• Peanut butter/peanuts/hazelnuts/almonds/nuts</li> <li>• Spinach</li> <li>• Broccoli</li> <li>• Bananas</li> <li>• Lettuce</li> <li>• Onions</li> <li>• Avocados</li> <li>• Sweet potato</li> </ul> <b>Credit will be given for all valid points.</b>	2	<b>ONE MARK</b> for each food. <b>TWO</b> required.  Don't except repetition e.g. 2 oils 'Grains', 'green leafy vegetables', 'pulses' are too vague
1	c	ii	State <b>one</b> function of vitamin E. <ul style="list-style-type: none"> <li>• helps to maintain healthy skin/eyes (1)</li> <li>• strengthens the immune system (1)</li> <li>• protects the body against free radicals/antioxidant (1)</li> <li>• important for formation of red blood cells (1)</li> <li>• helps the body use vitamin K (1)</li> </ul>	1	
1	d		Explain <b>two</b> reasons why food packaging is important to retailers. <ul style="list-style-type: none"> <li>• Protection of the food product for contamination/damage (1) saves money/less wastage/extend shelf life (1)</li> <li>• To protect a product during transit (1) makes it quicker (1) saves money (1) less damage(1)</li> </ul>	4	<b>FOUR MARKS</b> are available. Two marks for explaining each reason fully. <b>TWO</b> required.

Question		Answer/Indicative content	Mark	Guidance
		<ul style="list-style-type: none"> <li>Promotes/advertises the product (1) encourage sales/reinforce brand image (1)</li> <li>Provides information e.g. use by date (1) stock rotation/reduces wastage (1)</li> <li>Used to determine the quality of the product (1) retailer can price accordingly (1)</li> <li>Makes it easier to display in store/hold the food (1) Saves time/money/increases sales (1)</li> <li>Packaging can ensure the product is safe/secure (1) reduces risk of theft/reduces risk contamination of product (1)</li> <li>Increases shelf life/transport time e.g. salad in CO<sub>2</sub> (1) less wastage (1)</li> <li>Innovation can be demonstrated (1) maintain market share/consumer loyalty (1)</li> </ul> <p><b>Credit will be given for all valid points.</b></p>		
1	e	<p>Explain the statutory labelling requirements for all prepacked food in the UK.</p> <p>The <b>compulsory information</b> on the product packaging from December 2016:</p> <ul style="list-style-type: none"> <li>the name of the food</li> <li>description of the product</li> <li>the quantitative ingredients declaration (QUID) (where needed)</li> <li>a list of ingredients (listed in descending order of weight)</li> <li>allergy information/allergens*</li> <li>the weight or volume of the food (net quantity)</li> <li>a 'best before' or 'use by' date</li> <li>the name and address of the food business operator responsible for the food information</li> <li>the alcoholic strength by volume (as a percentage) on</li> </ul>	6	<p><b>Level 3 (5-6 marks)</b> Candidates are able to demonstrate clear knowledge of the statutory labelling requirements for all prepacked food in the UK. The explanation will be detailed. The explanation will be well developed and supported by the use of subject specific examples. Ideas will be expressed clearly and fluently.</p> <p><b>Level 2 (3-4 marks)</b> Candidates are able to demonstrate satisfactorily knowledge of the statutory labelling requirements for all prepacked food in the UK. The explanation will show understanding. The explanation may not be fully developed and may lack specific examples.</p>

Question	Answer/Indicative content	Mark	Guidance
	<p>drinks containing over 1.2% alcohol by volume</p> <ul style="list-style-type: none"> <li>• cooking/heating instructions</li> <li>• storage instructions</li> <li>• place of origin</li> <li>• nutritional information under new guidance</li> <li>• nutritional information if they have made a claim about health e.g. low fat</li> <li>• lot number/batch number</li> <li>• GM/irradiation treatment</li> <li>• Package in a protective atmosphere</li> </ul>		<p><b>Level 1 (1-2 marks)</b> Candidates are able to demonstrate superficial knowledge of the statutory labelling requirements for all prepacked food in the UK. They will show very limited understanding.</p> <p><b>0 marks</b> No response worthy of credit.</p> <p>*Allergens are:</p> <ul style="list-style-type: none"> <li>• cereals containing gluten, e.g. wheat, rye, barley and oats</li> <li>• crustaceans, eg prawns, crabs, lobster, crayfish</li> <li>• eggs</li> <li>• fish</li> <li>• peanuts</li> <li>• soybeans</li> <li>• milk (including lactose)</li> <li>• nuts</li> <li>• celery (including celeriac)</li> <li>• mustard</li> <li>• sesame seeds</li> <li>• sulphur dioxide/sulphites, if they are more than 10 milligrams per kilogram or 10 milligrams per litre in the finished product</li> <li>• lupin including lupin seeds and flour</li> <li>• molluscs</li> </ul>

Question	Answer/Indicative content	Mark	Guidance
2	<p><b>SECTION B</b></p> <p><b>Discuss the nutritional significance of mineral elements in the diet during childhood and adolescence.</b></p> <p>Answers may include:</p> <ul style="list-style-type: none"> <li>• Minerals elements are very important in the diet of children. Iron deficiency is the most common nutrient deficiency in the world.</li> <li>• Major minerals are those that are required in the amounts of 100 mg (milligrams) or more, while trace minerals are required in amounts less than 100 mg per day.</li> <li>• The terms major and trace, however, do not reflect the importance of a mineral in maintaining health, as a deficiency of either can be harmful.</li> <li>• The major mineral group is made up of calcium, phosphorus, magnesium, sodium, potassium, chloride, and sulphur.</li> <li>• Trace minerals includes iron, manganese, copper, iodine, zinc, cobalt, fluoride, and selenium.</li> </ul> <p>*RNIs for all the minerals are in the guidance. The main minerals:</p> <p><b>Iron</b></p> <ul style="list-style-type: none"> <li>• Iron from animal sources (<i>haem iron</i>) is better absorbed than iron from plant sources (<i>non-haem iron</i>). The main sources of iron are meat, offal, dried fruit, red kidney beans, cocoa, bread, cereal products, potatoes and vegetables.</li> <li>• Non-haem iron is present in the food as ferric iron, which cannot be absorbed by the body. Before it can be absorbed, it has to be changed into ferrous iron. Vitamin C is required in this process.</li> </ul>	25	<p><b>Level 4 (19-25 marks)</b> The candidate demonstrates an accurate knowledge of the importance of minerals in the diet. The discussion about their significance will be detailed. 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>Level 3 (13-18 marks)</b> The candidate demonstrates a good knowledge of the role of the importance of minerals in the diet. The discussion about their significance will show good understanding. The information will be presented clearly and some subject specific terminology will be used. There may be occasional errors of grammar; punctuation and spelling.</p> <p><b>Level 2 (7-12 marks)</b> The candidate demonstrates some knowledge of the importance of minerals in the diet. The discussion about their significance will show a limited understanding and may lack detail. The information will be presented simply and some subject specific terminology will be used, although not always used appropriately. There will be errors of grammar, punctuation and spelling.</p> <p><b>Level 1 (1-6 marks)</b> The candidate demonstrates superficial knowledge of the importance of minerals in the diet. They will show very limited understanding. The information will be poorly expressed with little or no use of subject specific terminology. Errors of grammar, punctuation and spelling may be intrusive.</p> <p><b>0 marks</b></p>

Question	Answer/Indicative content	Mark	Guidance																																																						
	<ul style="list-style-type: none"> <li>• Iron is needed for the formation of <i>haemoglobin</i> in red blood cells, which transport oxygen from the lungs to body tissues.</li> <li>• Teenage girls in particular are affected by poor iron status due to increased iron losses during menstruation that are not replaced/iron prevents iron deficiency anaemia.</li> <li>• Iron is required for normal energy metabolism, and for metabolism of drugs and foreign substances that need to be removed from the body.</li> <li>• The immune system also requires iron for normal function.</li> </ul> <p><b>Calcium</b></p> <ul style="list-style-type: none"> <li>• Vitamin D promotes the absorption of calcium</li> <li>• Calcium is the main constituent of <i>hydroxyapatite</i>, the principal mineral essential for building and maintaining healthy bones and teeth.</li> <li>• Calcium requirements increase dramatically from about the age of 11 years</li> <li>• Rickets is associated with a calcium deficiency.</li> <li>• Calcium is needed for contraction of the muscles, including the maintenance of a regular heartbeat, and for nerve function. It is involved in blood clotting.</li> <li>• Adequate intake of calcium throughout childhood and adolescence is important for proper mineralization of growing bones, attainment of peak bone mass, and reduction of risk for osteoporosis in adulthood.</li> <li>• Low calcium intakes are common, especially among children who shun milk and dairy foods to avoid fat calories.</li> <li>• Milk and dairy products, fish bones (such as in canned salmon and sardines), and dark-green, leafy vegetables are the best sources of calcium.</li> </ul> <p><b>Phosphorus</b></p> <ul style="list-style-type: none"> <li>• Phosphorus is essential for bone and tooth structure.</li> </ul>		<p>No response worthy of credit.</p> <p><b>*Reference nutrient intakes for minerals</b></p> <p>The table shows the daily requirement for the key minerals:</p> <table border="1" data-bbox="1279 392 2067 647"> <thead> <tr> <th>Age</th> <th>Cal mg/d</th> <th>Phos mg/d</th> <th>Sod mg/d</th> <th>Pot mg/d</th> <th>Iron mg/d</th> <th>Iod µg/d</th> <th>Zinc mg/d</th> <th>Mag mg/d</th> </tr> </thead> <tbody> <tr> <td>1-3yr</td> <td>350</td> <td>270</td> <td>500</td> <td>800</td> <td>6.9</td> <td>70</td> <td>5.0</td> <td>85</td> </tr> <tr> <td>4-6yr</td> <td>450</td> <td>350</td> <td>700</td> <td>1,100</td> <td>6.1</td> <td>100</td> <td>6.5</td> <td>120</td> </tr> <tr> <td>7-10yr</td> <td>550</td> <td>450</td> <td>1,200</td> <td>2,000</td> <td>8.7</td> <td>110</td> <td>7.0</td> <td>200</td> </tr> <tr> <td><b>Male</b> 11-14yr</td> <td>1,000</td> <td>775</td> <td>1,600</td> <td>3,100</td> <td>11.3</td> <td>130</td> <td>9.0</td> <td>280</td> </tr> <tr> <td><b>Female</b> 11-14yr</td> <td>800</td> <td>625</td> <td>1,600</td> <td>3,100</td> <td>14.8*</td> <td>130</td> <td>9.0</td> <td>280</td> </tr> </tbody> </table> <p>* Insufficient for women with high menstrual losses</p>	Age	Cal mg/d	Phos mg/d	Sod mg/d	Pot mg/d	Iron mg/d	Iod µg/d	Zinc mg/d	Mag mg/d	1-3yr	350	270	500	800	6.9	70	5.0	85	4-6yr	450	350	700	1,100	6.1	100	6.5	120	7-10yr	550	450	1,200	2,000	8.7	110	7.0	200	<b>Male</b> 11-14yr	1,000	775	1,600	3,100	11.3	130	9.0	280	<b>Female</b> 11-14yr	800	625	1,600	3,100	14.8*	130	9.0	280
Age	Cal mg/d	Phos mg/d	Sod mg/d	Pot mg/d	Iron mg/d	Iod µg/d	Zinc mg/d	Mag mg/d																																																	
1-3yr	350	270	500	800	6.9	70	5.0	85																																																	
4-6yr	450	350	700	1,100	6.1	100	6.5	120																																																	
7-10yr	550	450	1,200	2,000	8.7	110	7.0	200																																																	
<b>Male</b> 11-14yr	1,000	775	1,600	3,100	11.3	130	9.0	280																																																	
<b>Female</b> 11-14yr	800	625	1,600	3,100	14.8*	130	9.0	280																																																	

Question	Answer/Indicative content	Mark	Guidance
	<p>Calcium phosphate provides the strength of bones and teeth which is crucial during childhood.</p> <ul style="list-style-type: none"> <li>• It is needed for the release of energy from cells.</li> <li>• Phosphorus is in almost all animal and vegetable foods and is often found in foods that contain calcium.</li> </ul> <p><b>Potassium</b></p> <ul style="list-style-type: none"> <li>• Potassium has a complementary action with sodium in the functioning of cells, including nerves. More nerve tissue is required during childhood.</li> <li>• Sources include bananas, sweet potato, tomato, water melon, potatoes.</li> <li>• It is essential for water and electrolyte balance.</li> </ul> <p><b>Zinc</b></p> <ul style="list-style-type: none"> <li>• Zinc is an essential constituent of over 100 enzymes, and plays a part in protein and carbohydrate metabolism.</li> <li>• It is needed for the functioning of the immune system and in the structure and function of the skin and, therefore, in wound healing.</li> <li>• Red meat and poultry provide the majority of zinc in the diet; vegetarian children can suffer deficiencies.</li> </ul> <p><b>Magnesium</b></p> <ul style="list-style-type: none"> <li>• Magnesium is an essential constituent of all cells and is needed for the functioning of some enzymes involved in normal energy metabolism and electrolyte balance.</li> <li>• Sources include spinach, chard, yoghurt, almonds and pumpkin seeds.</li> <li>• It is also needed for nerve, muscle and brain function which is rapidly increasing during childhood.</li> </ul> <p><b>Fluoride</b></p> <ul style="list-style-type: none"> <li>• Fluoride contributes to the maintenance of bone health by supporting bone mineralisation.</li> <li>• Children with a low fluoride intake are at risk of dental caries.</li> </ul>		

Question	Answer/Indicative content	Mark	Guidance
	<ul style="list-style-type: none"> <li>• Sources include water.</li> <li>• By combining with calcium phosphate to form calcium fluorapatite, fluoride protects the teeth by hardening tooth enamel, thereby increasing resistance against dental decay (caries)</li> </ul> <p><b>Sodium</b></p> <ul style="list-style-type: none"> <li>• Sodium and potassium are involved in the transmission of nerve impulses and muscle contraction, all of which increase during childhood.</li> <li>• Sodium is present in the soft tissues and body fluids and helps regulate body water content and electrolyte balance.</li> <li>• Low intakes of sodium results in muscle cramps; a deficiency of sodium is linked with heat exhaustion.</li> <li>• High intake of sodium should be avoided.</li> </ul> <p><b>Iodine</b></p> <ul style="list-style-type: none"> <li>• Rich sources of iodine are seafood's and edible seaweed; some iodine is also found in meat, eggs, milk and dairy products.</li> <li>• Iodine is absorbed in the thyroid gland in the neck where it is converted into two hormones – Triiodothyronine and Thyroxine.</li> <li>• Low iodine diet can affect brain development in children.</li> </ul> <p><b>Credit will be given for all valid points.</b></p>		
3	<p><b>Discuss the value of eggs in the diet.</b></p> <p>Answers may include: References to the their nutritional value:</p> <ul style="list-style-type: none"> <li>• An average medium egg has an energy value of 76 kilocalories.</li> <li>• Eggs are an important source of high quality protein. This is because of the essential amino acid profile and</li> </ul>	25	<p><b>Level 4 (19-25 marks)</b> The candidate demonstrates an accurate knowledge of the value of eggs in the diet. The discussion will be detailed. 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,</p>

Question	Answer/Indicative content	Mark	Guidance
	<p>the high digestibility of egg protein.</p> <ul style="list-style-type: none"> <li>• 12.6% of the weight of the egg is protein and it is found in both the yolk and the white (albumen).</li> <li>• Egg protein is a rich source of the essential amino acid leucine, which is important in controlling the use of glucose by muscles and in helping muscle recovery after exercise. This is beneficial to people undergoing endurance training.</li> <li>• In comparison with other high protein foods, eggs are a relatively inexpensive source of protein.</li> <li>• It is a complete food except for the fact that eggs do not contain vitamin C and carbohydrate.</li> <li>• Eggs are a good source of all the B vitamins.</li> <li>• Eggs are a rich source of vitamins B12 and riboflavin (vitamin B2) and a useful source of folate. The egg is also a good source of the fat-soluble vitamins A and D and provides some vitamin E.</li> <li>• Eggs contain many of the minerals that the human body requires for health.</li> <li>• Eggs are an excellent source of iodine, required to make the thyroid hormone, and selenium, an important antioxidant.</li> <li>• The egg is a significant source of phosphorus, required for bone health, and provides some zinc, important for wound healing, growth and fighting infection.</li> <li>• Eggs also contain iron, the vital for red blood cells.</li> <li>• 9.0% of the egg content is fat. The fat of an egg is found almost entirely in the yolk; there is less than 0.5% in the albumen.</li> <li>• Most of an egg's total fatty acid composition is monounsaturated (approximately 38%). About a further 16% is polyunsaturated and 28% is saturated.</li> <li>• An average medium size egg contains 177mg cholesterol. A high intake of cholesterol has been associated with heart disease.</li> </ul>		<p>punctuation and spelling.</p> <p><b>Level 3 (13-18 marks)</b> The candidate demonstrates a good knowledge of the value of eggs in the diet. The discussion will show good understanding. The information will be presented clearly and some subject specific terminology will be used. There may be occasional errors of grammar; punctuation and spelling.</p> <p><b>Level 2 (7-12 marks)</b> The candidate demonstrates some knowledge of the value of eggs in the diet. The discussion will show a limited understanding and may lack detail. The information will be presented simply and some subject specific terminology will be used, although not always used appropriately. There will be errors of grammar, punctuation and spelling.</p> <p><b>Level 1 (1-6 marks)</b> The candidate demonstrates superficial knowledge of the value of eggs in the diet. They will show very limited understanding. The information will be poorly expressed with little or no use of subject specific terminology. Errors of grammar, punctuation and spelling may be intrusive.</p> <p><b>0 marks</b> No response worthy of credit.</p>

Question	Answer/Indicative content	Mark	Guidance
	<ul style="list-style-type: none"> <li>• Omega 3 enriched eggs are available/brain development</li> <li>• Eggs satiate the appetite</li> </ul> <p>Eggs have three important performance characteristics which make them useful in the diet: coagulation, foam formation and emulsification.</p> <p><b>Coagulation</b></p> <ul style="list-style-type: none"> <li>• The proteins in an egg coagulate during the cooking process.</li> <li>• The egg white will coagulate at temperatures between 60°C and 65°C. This result in the egg white losing its transparency, when the egg reaches 70°C it becomes firm.</li> <li>• In the preparation of baked dishes containing eggs it is important to avoid overcooking. The protein will denature.</li> <li>• If egg is over cooked the process of syneresis may occur. The texture will become porous and as the protein shrinks pockets of water are left in the baked product.</li> <li>• Other ingredients in the mixture can affect the coagulation process. A firmer set can be achieved at a lower temperature if the there is an increased concentration of egg proteins or an acid is added.</li> <li>• A looser set is achieved and higher coagulation temperature by the addition of sugar to the mixture.</li> <li>• The egg yolk proteins coagulate at a slightly higher temperature than egg white proteins. Coagulation begins at 65°C and finishes at 70°C.</li> </ul> <p><b>Foam Formation</b></p> <ul style="list-style-type: none"> <li>• A foam is formed when gases are dispersed through the liquid. The egg white foams very easily.</li> <li>• Egg white can be used for aeration due to the ability of the ovalbumin to stretch and hold air e.g. meringues and mousses.</li> </ul>		

Question	Answer/Indicative content	Mark	Guidance
	<ul style="list-style-type: none"> <li>• When egg white is whisked the proteins are denatured and uncoil. This forms a 3D air/liquid matrix. This can hold air when folded into food mixtures.</li> <li>• The foam is unstable but the properties can be manipulated with the use of additional ingredients:</li> <li>• Salt will decrease the pH of the egg white and this increases the resistance so the foaming time is increased. This makes the foam more stable and gives a better flavour.</li> <li>• Sugar will interfere with the bonds that form as the whites uncoil. Therefore the whisking time is increased and the resulting foam is denser. However, the foam is much more stable. The property is used in the production of meringues.</li> <li>• Fat including egg yolk interferes with the development of the foam structure. It prevents new bonds being formed in the 3D matrix. Often full foam will not develop.</li> <li>• Alkali will increase the pH of the foam decreasing the foaming time but making the foam more unstable.</li> <li>• Acids like tartaric and acetic (vinegar) will soften the foam.</li> <li>• The ability of the whole egg to trap air can also be used in cake making by creaming and whisking methods e.g. Swiss roll, sponge cakes</li> <li>• If an egg mixture is under whisked the baked product will have poor volume.</li> <li>• The fat in the yolk exerting a shortening effect on the flour can enhance the texture of the baked product.</li> <li>• Eggs can also act as emulsifiers to assist the formation of a stable emulsion in a creamed cake mixture containing fat and sugar.</li> <li>• Sponge batters must be baked shortly after preparation. During baking the steam produced from the liquid in the egg expands.</li> </ul>		

Question	Answer/Indicative content	Mark	Guidance
	<ul style="list-style-type: none"> <li>• The coagulated egg will also contribute to the structure of a baked product and the egg yolk to the golden colour.</li> </ul> <p><b>Emulsification</b></p> <ul style="list-style-type: none"> <li>• An emulsion is formed when one liquid is dispersed in small droplets into a second liquid with which it will not normally mix. The most common emulsion is oil in water e.g. milk, salad dressings or egg yolks. Emulsions usually cannot exist without an emulsifying agent.</li> <li>• Egg yolk has emulsification properties, which means it has the ability to hold large quantities of fat in an emulsion.</li> <li>• The yolk contains lecithin, which has a hydrophobic (water hating) component and hydrophilic (water loving) component.</li> <li>• When fat or oil is whisked into the yolk the lecithin can hold it in suspension and prevent it from separating out. This property is used in mayonnaise and other salad dressings.</li> </ul> <p><b>Other uses</b></p> <ul style="list-style-type: none"> <li>• Binding, coating, thickening, setting, garnish, glaze.</li> <li>• Quick way of producing a nutritious meal e.g. egg on toast/poach/boil/fry.</li> </ul> <p><b>Credit will be given for all valid points.</b></p>		

Question	Answer/Indicative content	Mark	Guidance
4	<p><b>Discuss the reasons for changes in the availability and supply of food and food products in the UK.</b></p> <p>Answer may include references to:</p> <p><b>Safety and confidence</b></p> <ul style="list-style-type: none"> <li>• Scrutiny of supply chains have changed due to concerns about food safety.</li> <li>• The traceability of has become significant because of food scares i.e. undeclared horsemeat discovered in some meat products.</li> </ul> <p><b>Price and expenditure</b></p> <ul style="list-style-type: none"> <li>• Food prices have risen in real terms.</li> <li>• Demand for biofuels has meant the use of agricultural land has changed. Land that was previously used for growing cereals and staples is now used for growing crops that can be converted into biofuels. Food prices have increased.</li> <li>• Oil prices affect the cost and supply of food. The production, processing and distribution all require the use of energy from oil and petrol. Increases in the price of oil result in high fuel, fertiliser, transport, packaging and storage costs. Many of these costs are added to the price of food.</li> <li>• A rise in food prices effects low income households most because those on low incomes spend a greater proportion of their income on food.</li> <li>• Many households have internet access and can arrange shopping and home delivery of food products. Home deliveries have increased/specialist suppliers.</li> <li>• Manufacturers provide a variety of food products at different prices from 'no frills ranges' to luxury products.</li> </ul> <p><b>UK supply</b></p>	25	<p><b>Level 4 (19-25 marks)</b> The candidate demonstrates an accurate knowledge of the reasons for changes in the availability and supply of food and food products in the UK. The discussion will be detailed. 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>Level 3 (13-18 marks)</b> The candidate demonstrates a good knowledge of the reasons for changes in the availability and supply of food and food products in the UK. The discussion will show good understanding. The information will be presented clearly and some subject specific terminology will be used. There may be occasional errors of grammar; punctuation and spelling.</p> <p><b>Level 2 (7-12 marks)</b> The candidate demonstrates some knowledge of the reasons for changes in the availability and supply of food and food products in the UK. The discussion will show a limited understanding and may lack detail. The information will be presented simply and some subject specific terminology will be used, although not always used appropriately. There will be errors of grammar, punctuation and spelling.</p> <p><b>Level 1 (1-6 marks)</b> The candidate demonstrates superficial knowledge of the reasons for changes in the availability and supply of food and food products in the UK. They will show very limited</p>

Question	Answer/Indicative content	Mark	Guidance
	<ul style="list-style-type: none"> <li>• Twenty two countries accounted for 90% of UK food supply.</li> <li>• Fruit and vegetables account for most imported food.</li> <li>• More food from overseas is available due to better transport systems and developments in storage environments.</li> <li>• Rapid transportation in a controlled environment of food perishable products increases consumer choice and food availability.</li> <li>• Packaging extending the shelf life of a product means less frequent shopping e.g. modified atmospheric packaging for raw meats and salads.</li> <li>• Technological developments in food packaging e.g. from freezer to oven mean that food manufacturers have been able to supply a wider range of foods products.</li> <li>• Food industry has increased the supply of convenience foods to respond to the trend of reduced time spent in the kitchen e.g. Microwave meals and cook chill meals.</li> <li>• Major food retailers/supermarkets supply most of the food. The market share for discount retailers is increasing.</li> <li>• Immigration and foreign travel has resulted in more choice of food products/demand has increased.</li> </ul> <p><b>Environmental/ethical concerns</b></p> <ul style="list-style-type: none"> <li>• There has been a steady decrease in the total amount of food waste generated and an increase in the amount of food waste collected for recycling.</li> <li>• Global warming/climate change affect supply.</li> <li>• Fish stocks continue to decline due to over fishing.</li> <li>• New species/fish from sustainable sources appear in many fish products and be available for retail sale.</li> <li>• Concerns about 'Fair pay for farmers' has increased the supply of food of regional/local origin in the UK and fair trade products to support farmers in developing</li> </ul>		<p>understanding. The information will be poorly expressed with little or no use of subject specific terminology. Errors of grammar, punctuation and spelling may be intrusive.</p> <p><b>0 marks</b> No response worthy of credit.</p>

Question	Answer/Indicative content	Mark	Guidance
	<p>countries.</p> <ul style="list-style-type: none"> <li>• Concerns about animal welfare standards and the environmental impact has led to a wider range of products championing these issues e.g. products which are organic or free from pesticides.</li> <li>• Concerns for the amount of fuel used to transport food e.g. carbon footprint, food miles.</li> </ul> <p><b>Dietary health</b></p> <ul style="list-style-type: none"> <li>• Purchases of fruit and vegetables (5 A DAY) across all households has increased.</li> <li>• The obesity rates have increased. The range of low fat/sugar free/fat free/low in saturates products has increased.</li> <li>• More awareness about food allergies has affected food choice and supply increasing demand for ‘additive free’ products.</li> <li>• The supply of clear nutritionally labelled food has increased. Most pre-packed foods have a nutrition label on the back or side of the packaging.</li> <li>• Health trends e.g. alternative milks/vegetarians/bloggers/celebrities</li> </ul> <p><b>Credit will be given for all valid points.</b></p>		

**OCR (Oxford Cambridge and RSA Examinations)**  
**1 Hills Road**  
**Cambridge**  
**CB1 2EU**

**OCR Customer Contact Centre**

**Education and Learning**

Telephone: 01223 553998

Facsimile: 01223 552627

Email: [general.qualifications@ocr.org.uk](mailto:general.qualifications@ocr.org.uk)

**[www.ocr.org.uk](http://www.ocr.org.uk)**

For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored

**Oxford Cambridge and RSA Examinations**  
**is a Company Limited by Guarantee**  
**Registered in England**  
**Registered Office; 1 Hills Road, Cambridge, CB1 2EU**  
**Registered Company Number: 3484466**  
**OCR is an exempt Charity**

**OCR (Oxford Cambridge and RSA Examinations)**  
**Head office**  
**Telephone: 01223 552552**  
**Facsimile: 01223 552553**

© OCR 2017

