

Home Economics (Food, Nutrition and Health)

Advanced GCE

Unit **G004**: Nutrition and Food Production

Mark Scheme for June 2012

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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.

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Annotations

1		281	?	Unclear
2		31	BOD	Benefit of doubt
3		1071	Caret	Caret sign to show omission
4		501	NAQ	Not answered question
5		271	REP	Repeat
6		811	SEEN	Noted but no credit given
7		11	Tick	Tick

Subject-specific Marking Instructions

Marking crossed out and duplicated answers

OCR currently provides examiners with 'rules' for marking crossed out answers (which may be partially or wholly correct) and duplicated answers. Duplicated answers refer to two (or more) alternative responses to the same question, or responses to more optional questions than required within the paper rubric.

The rules are as follows:

Crossed out answers

- where a candidate crosses out an answer and provides an alternative response the crossed out response is not marked and gains no marks
- where a candidate crosses out an answer to a whole question, but makes no second attempt and the inclusion of the answer would not cause a rubric infringement, the assessor should attempt to mark the crossed out response and award marks appropriately.

Duplicated answers

- normally all responses are marked and the highest mark given
- where alternate answers are provided to a multiple choice question, no mark should be awarded (for example: following a request to tick one box, the candidate ticks two or more boxes)
- where the candidate provides contradictory responses, no mark should be awarded (for example: the candidate writes a statement such as 'water freezes at 0°C this means it is a liquid at -10°C'). The candidate, here, does not seem to understand the context of the 'question'
- where the candidate has adopted a 'scattergun' approach by providing multiple answers to a single response question, no mark should be awarded.

Question			Answer	Mark	Guidance
1	(a)	(i)	<p>One mark is available for any correctly identified good source.</p> <ul style="list-style-type: none"> • Any milk fats eg cheese, butter, chocolate • Any red meat fat eg lamb • Any processed high fat meat product eg sausages, bacon • Pastry • Any oily fish eg mackerel • Full fat milk/whole milk <p>Credit will be given for all valid points.</p>	1	
		(ii)	<p>One mark is available. One mark for any correctly identified good source.</p> <ul style="list-style-type: none"> • Peanut/nuts • soya bean • sunflower • avocados • olive • margarine/low fat spread <p>Credit will be given for all valid points.</p>	1	No beans apart from soya
		(iii)	<p>Three marks are available. One mark for stating each function.</p> <ul style="list-style-type: none"> • Provide a source of energy/protein sparer. • Protects internal organs such as the kidneys. • An essential component of all cell membranes in the body. • Provides a source for the fat-soluble vitamins/ A, D, E and K. • Provides essential fatty acids/omega 3 & 6/brain function. • Delays gastric emptying. • Fat is an insulator/decreases rate of thermal loss/provides warmth/creates fatty(adipose) tissue/long term energy store. 	3	

Question		Answer	Mark	Guidance
	(b) (i)	<p>One mark is available. One mark for stating any correct food source.</p> <ul style="list-style-type: none"> All foods which are vegetable or fruit in origin Bran/ barley, oats, rye, brown/wild rice and whole meal/wholewheat. <p>Credit will be given for all valid points</p>	1	Not Bread alone, must say brown/wholemeal/granary etc
	(ii)	<p>Two marks are available for fully explaining one function.</p> <ul style="list-style-type: none"> Cellulose adds bulk to the faeces/holds, binds water/regulates motions/stimulates bowel movement (1). A high intake of fibre-rich foods may protect against bowel cancer/diverticulitis/constipation (1). Pectin in fruit and beta glucan in oats (1) may slightly reduce the level of cholesterol in blood (1). Diets high in dietary fibre are beneficial to diabetics (1) because dietary fibre slows down the release of glucose into the bloodstream (1). Fibre-rich foods are often recommended in weight-reducing diets (1). They contain fewer calories and when eaten they give a feeling of fullness (1) and satiety/reduces risk of overeating (1). 	2	<p>Do not except 'aids digestion' or 'helps digestion'</p> <p>Example Give a feeling of fullness and so reduces over eating (2)</p>
	(c) (i)	<p>One mark is available for stating one function.</p> <ul style="list-style-type: none"> Iodine is required for (energy) metabolism. Iodine is converted into two hormones – triiodothyronine and thyroxine. Prevents mental retardation/cretinism Needed for growth in children/ neurological development Prevents goitre/keeps thyroid gland healthy 	1	<p>Do not accept nerve function</p> <p>Not poor growth alone</p>
	(ii)	<p>One mark is available for identifying one source.</p> <ul style="list-style-type: none"> Any named seafood/shellfish Edible seaweed/lava bread Green vegetables 	1	<p>Accept fish</p> <p>Not meat</p>

Question		Answer	Mark	Guidance
		<ul style="list-style-type: none"> Eggs Milk/dairy products Iodized salt 		
	(iii)	Award one mark for the deficiency disease. The correct answer is goitre/swelling of thyroid gland/cretinism.	1	

Question		Answer	Marks	Content	Guidance
					Levels of response
1	(d)	<p>Answers may include:</p> <ul style="list-style-type: none"> Folic acid. Women who are planning to get pregnant to consume folic acid to prevent the development of spina bifida. Vitamin D. Asian women who may be required to keep their skin covered for cultural reasons and housebound elderly people may have limited exposure to sunlight and therefore lack vitamin D. Vitamin D. Pregnant women to reduce the risk of vitamin D deficiency babies. Vitamins A, C and D supplements may be taken by those who don't have sufficient access to fresh fruit and vegetables eg Children in low income households. Vitamin B12 may be needed by vegans to reduce the risk of pernicious anaemia. 	6	Need to specify the individual Specify a vitamin and explain the significance.	<p>Level 3 (5-6 marks) Candidates are able to demonstrate clear knowledge on how vitamin supplementation can help some individuals meet their dietary needs. The explanation will show detailed understanding. The explanation will be well developed and 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>Level 2 (3-4 marks) Candidates are able to demonstrate satisfactorily knowledge on how vitamin supplementation can help some individuals meet their dietary needs. They will show understanding. The explanation may not be fully developed and may lack specific examples. There may be occasional errors of grammar, punctuation or spelling.</p>

Question			Answer	Marks	Content	Guidance
						Levels of response
			<ul style="list-style-type: none"> Thiamine. Some people undertaking intense training or sporting activities may need to take extra B vitamins to support their increased energy requirements. 			<p>Level 1 (1-2 marks) Candidates are able to demonstrate superficially satisfactory the how vitamin supplementation can help some individuals meet their dietary needs. They will show very limited understanding. The information may be poorly expressed and errors of grammar, punctuation and spelling will be intrusive.</p> <p>0 = no response worthy of credit</p>

Question			Answer	Mark	Guidance
	(e)	(i)	<p>One mark is available for each correctly identified method.</p> <ul style="list-style-type: none"> Questionnaire/surveys Interview/focus groups Government reports/publications Business/commercial publications and statistical data eg Mintel Observations purchasing habits by scanning technology Product/pilot trials Sensory testing Evaluating existing products/dissassembly Visiting restaurants/supermarkets Visiting other countries eg to investigate authentic products. 	2	<p>Do not accept quantitative or qualitative research unless qualified</p> <p>Do not accept research online/internet</p> <p>Must specify the type of market research not recipe books or magazines</p>
		(ii)	<p>Two marks are available for fully explaining an advantage.</p> <ul style="list-style-type: none"> Finding a gap in the market/identify target market/need (1)so the manufacturer knows what food to produce. It reduces the uncertainty when launching a new food product (1). Potentially saves money (1). An existing product can be developed (1). The feedback received may lead to further refinements or developments (1). 	2	<p>Must explain what it does + <u>how</u> the manufacturer benefits</p>

Question	Answer	Mark	Guidance
	<ul style="list-style-type: none"> • It can be used to monitor the performance of a product against the competitive products, to maintain market share (1). • New trends may emerge and manufacturers need to be aware of them for further product development (1). • Market research ensures that informed decisions can be made about managing the product (1) ensuring the product remains competitive (1). • Information received from market research may be used to support investment in advertising (1) and widen distribution of a product (1). <p>Credit will be given for all valid points.</p>		
(f)	<p>1 mark identifying one behaviour change during the production. Max 2 marks.</p> <p>1 mark explaining how each identified behaviour change affects the pastry. Max 2 marks.</p> <ul style="list-style-type: none"> • The fat acts as a shortening agent by coating the flour (1) particles and preventing them from absorbing water. This prevents gluten formation (1). • Mixture forms soft dough (1) due to cold water being absorbed by the starch (1) • Gluten is stretched(1) . Dough can be rolled out. • Protein molecules coagulate with heat (1). Pastry becomes firmer/sets/becomes crispy.(1) • Air trapped inside during rubbing in expands (1). Water turns to steam/evaporates (1). • Non enzymic browning or the dextrinisation/maillard reaction occurs on the surface of the pastry (1). Pastry turns golden brown(1). 	4	Identify physical change eg fat coating flour (1)and prevents gluten formation (1) accurate explanation for second mark

Question		Answer	Marks	Content	Guidance
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2		<p>Answers may include:</p> <p>Nutritional value of meat:</p> <ul style="list-style-type: none"> • Meat is protein that is of high biological value. • Fat is present in varying quantities, depending on the type and cut of meat. • Meat is a valuable source of iron, present as haem iron, and contains the minerals zinc, potassium and phosphorus and the vitamins thiamin, riboflavin and niacin. • Lean meat contains very little vitamin A and almost no vitamin D, vitamin C or carbohydrate. • Vitamin A is found in liver at high levels which may be toxic if consumed in high quantities. Pregnant women should avoid liver and liver products. <p>Choice of meat:</p> <ul style="list-style-type: none"> • Beef most commonly used cuts are topside, steak, minced beef and brisket. • Pork most commonly used cuts are leg, chop and belly. • Bacon and gammon are the cured flesh of a pig. The meat is cured by salting and smoking or by soaking in brine followed by smoking. • Lamb most frequently used cuts are chops, shoulder, leg, and breast. • Chicken is the most popular type of poultry. Other types are duck, goose and turkey. Poultry has less connective tissue than red meat so is often more tender. 	25		<p>Level 4 (19-25 marks) The candidate demonstrates an accurate knowledge and makes a judgement on of how the nutritional value, choice and use of meat in food preparation and cooking. The explanation will show detailed 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>Level 3 (13-18 marks) The candidate demonstrates a good knowledge and makes a judgement of how the nutritional value, choice and use of meat in food preparation and cooking. 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>Level 2 (7-12 marks) The candidate demonstrates some knowledge of how some the nutritional value, choice and use of meat in food preparation and cooking. The explanation 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</p>

Question		Answer	Marks	Content	Guidance
					Levels of response
		<ul style="list-style-type: none"> • Game feathered (grouse, pheasant, partridge and ostrich) and furred (rabbit, hare and venison). • A wide variety of meat products are available, including curries, sausages, pies, burgers and pâté. Products such as gelatine and stock cubes are also by-products of the meat processing industry. <p>Use of meat:</p> <ul style="list-style-type: none"> • Grilling is suitable for tender cuts of meat. It is a healthy method of cooking because any fat present can drip down and away from the meat. • Shallow frying is suitable for tender cuts of meat, such as chicken cut into strips. It is a healthy method of cooking because it requires only a small amount of oil. • Roasting is a dry method of cooking involving baking a whole joint of meat in the oven. A variety of meats can be roasted. • Braising means cooking meat or poultry with the addition of some stock. A variety of meats can be braised including brisket. • Stewing is cooking in a small amount of liquid, which is simmered slowly; the liquid is served with the meat. 			<p>always used appropriately. There will be errors of grammar, punctuation and spelling.</p> <p>Level 1 (1-6 marks) The candidate demonstrates superficial knowledge of how the nutritional value, choice and use of meat in food preparation and cooking. 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>0 = no response worthy of credit</p>

Question		Answer	Marks	Guidance	
				Content	Levels of response
3		<p>Answers may include:</p> <p>Design and development</p> <ul style="list-style-type: none"> • Identification of gap in the market or modification of an existing product can be achieved by market research. Market research is expensive and time consuming. • Design possibilities explored with the development of a product specification and product prototypes for the new product. • The use of CAD will be employed to model ideas. Equipment and software will incur costs. • Costing of raw materials and the reliability of supplies will be examined. Importing ingredients will be expensive. • Producers may have to follow regulations and implementing legislation could be expensive. • Development of a selected product to include sensory testing and piloting small trials. Consumer trials are expensive to manage. <p>Production</p> <ul style="list-style-type: none"> • The food manufacturing system will be controlled by the HACCP system of risk assessment and safety checks. • Quality control and quality assurance systems will be used to ensure maintenance of a good quality end product. • Production of the food product may be large scale and will be controlled by a CAM system. The establishment of a new manufacturing system may be expensive. 	25	To gain level 3 & 4 must consistently link to cost and explain in detail the costs for level 4	<p>Level 4 (19-25 marks) The candidate demonstrates an accurate knowledge of the main costs involved in the design, development and production of food products. The explanation will show detailed 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>Level 3 (13-18 marks) The candidate demonstrates a good knowledge of the main costs involved in the design, development and production of food products. The explanation will show 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>Level 2 (7-12 marks) The candidate demonstrates some knowledge of some costs involved in the design, development and production of food products. The explanation will show a limited understanding and may lack detail. The information will be presented simply and some subject specific</p>

Question			Answer	Marks	Content	Guidance
						Levels of response
			<ul style="list-style-type: none"> Fixed costs are maintenance, staff salaries, fuel and insurance costs. Variable costs are affected by output and include the cost of ingredients, packaging materials, running costs of machinery. Labour costs. Staff may require training; specialist skills may be required for production. Staff may be required to work shifts, which means labour costs may increase. The establishment of a distribution system for the product. Refrigerated storage and transportation may be required for perishable food products. This will generate further costs for the distributor. Ideas for packaging will also be explored and the legal requirements for food labelling followed. There will be consideration of the target market, storage and cost of the packaging designs. The importance of pricing the product accurately for the competitive marketplace will be critical for success. Advertising a new or modified product can be achieved by using television, Internet, magazines, newspapers, flyers, radio and cinema. Over £600 million a year is spent on the commercial advertising of food in the UK. Advertising in store by promotional methods including free samples, money off coupons, loss leaders, competitions, bonus loyalty card points etc. These methods will cost money to implement. 			<p>terminology will be used, although not always used appropriately. There will be errors of grammar, punctuation and spelling.</p> <p>Level 1 (1-6 marks) The candidate demonstrates superficial knowledge of some costs involved in the design, development and production of food products. 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>0 = no response worthy of credit</p>

Question			Answer	Marks	Guidance	
					Content	Levels of response
			<ul style="list-style-type: none"> • Merchandising is an attempt at the point of sale to influence the consumer to make a purchase. The display material, positioning and design layout of the product may be structured to encourage the consumer to make a purchase. • Free publicity may be achieved by the food product being used as part of a recipe in a magazine or celebrity endorsement. • Packaging must be appropriate for the food product. The consumer will link the quality and design of the packaging with quality of the product itself. The packaging may add further costs to the product-selling price. • Exhibitions and trade shows eg Good Food Show can also be used to launch a new product to the public. Participation in these events can be expensive for manufacturers. 			

Question		Answer	Marks	Content	Guidance
					Levels of response
4		<p>Answers may include:</p> <ul style="list-style-type: none"> • Food industry has increased the availability of convenience foods to respond to the trend of reduced time spent in the kitchen. • Technological developments mean that food manufacturers have been able to develop ways of preserving food and selling it in a format with a longer shelf life, responding to people not wanting to shop daily. • Range of goods available has changed. More international food is available due to better transport systems, foreign holidays and the media such as magazines and television raise awareness of different cultures. • Food manufacturers have also responded to this with a broader range of products using foreign foods and flavours. • There is a greater variety of choice available within every food product. • Price ranges available within one product eg Value brands, own brands. • More luxury foods are available. People have a greater disposable income to spend and manufacturers produce more luxury food goods. • With economic downturn some people are needing to economise, therefore supermarkets are producing a value range for people with lower disposable income. • Media impact/celebrities, more endorsements of products. • Eating as a leisure activity. Manufacturers reflect this in the range of foods available eg sauces. 	25		<p>Level 4 (19-25 marks) The candidate demonstrates an accurate knowledge of how the food industry has responded to lifestyle changes to create the range and type of food products available today. The explanation will show detailed 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>Level 3 (13-18 marks) The candidate demonstrates a good knowledge of how the food industry has responded to lifestyle changes to create the range and type of food products available today. The explanation will show understanding and may lack detail. 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>Level 2 (7-12 marks) The candidate demonstrates some knowledge of how the food industry has responded to lifestyle changes to create the range and type of food products available today. The explanation will show a limited understanding and may lack detail.</p>

Question		Answer	Marks	Content	Guidance
		<ul style="list-style-type: none"> • Smaller households eg elderly, single people, the industry responds by producing single portion foods. • Families eating different foods, special products aimed at children eg Chicken nuggets • Recognition that most families have freezers/fridges the availability of frozen and cook chill foods increased. • Increased range of frozen/cook chill foods. • Busier lifestyles more 'food on the go' and ready to eat products eg cereal bars. • Multi-packs available to save time and money for consumers. • Reduced home cooking, more products that reflect a lack of time to prepare meals eg Part baked and pre-prepared products, mixes. • Foods with added nutrients to reflect current emphasis on healthy eating. Also result of fortification by law. • New products developed as a result of influences outside the food industry eg Low fat foods as a result of the Health of the Nation report. • Increased range for those with special diets eg slimmer's, low cholesterol, vegetarians. • Increased drive through and takeaways due to the need for convenience and speed. • New packaging eg microwaveable and 'ovenable' card. • Many households have Internet access and can arrange shopping and home delivery of food products. 			<p>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>Level 1 (1-6 marks) The candidate demonstrates superficial knowledge of how the food industry has responded to lifestyle changes to create the range and type of food products available today. The explanation will show a very limited understanding and may lack detail. 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>0 = no response worthy of credit</p>

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