

# FOOD AND NUTRITION

---

**Paper 0648/11**  
**Theory**

## **Key messages**

Questions requiring simple, straightforward responses were generally answered well.

In order to do well on the higher mark questions, candidates need to give reasons, explanations and examples in their answers. They should be able to demonstrate their ability to select appropriate information and to tailor their answers to the questions set.

Careful note should be taken of introductory words and sentences in the question as these establish the type of information required in the answers.

Questions which require discussion should include several different facts, with detailed reasons and examples to illustrate the points made.

Topics for further teaching are food additives and food preservation.

## **General comments**

Candidates had sufficient time to answer the required number of questions and, in general, were able to give factual answers to direct questions.

There were a few areas of the paper which required a detailed understanding of the science of the subject, and so stretched the more able candidates. Those candidates who were able to gain high marks, indicated a sound knowledge and understanding of the subject and an ability to apply that knowledge to situations presented in the examination. Explanations and examples were often given to illustrate points made. Candidates who performed less well relied on being able to recall facts, but further information given in answers suggested a lack of understanding.

Some answers suggested that candidates need to carefully read the whole question before beginning to answer and plan responses with appropriate information.

Centres are encouraged to prepare candidates for this exam by ensuring that they have a full understanding of the requirements of different question types: name, identify, define, state, give, describe, discuss and explain. Often, candidates had difficulty in achieving the full marks for questions asking for an explanation, because answers were not supported with relevant examples or reasoning.

Additionally, some of the technical questions relating to food products and nutritional understanding were lacking, incorrect or vague. Centres should focus on technical understanding to enable candidates to access the higher marks.

### **Comments on specific questions**

#### **Section A**

##### **Question 1**

- (a) The majority of candidates correctly defined the term overnutrition as consumption of excess food or nutrients.
- (b) The majority of candidates correctly stated that one common result of overnutrition is obesity.

##### **Question 2**

- (a) Many candidates gained full marks for giving four functions of proteins in the body. Most popular responses included growth, repair, energy, cell renewal and production of enzymes.
- (b) Many candidates were able to clearly explain that proteins which have a lower biological value lack at least one of the essential amino acids. A small number of answers showed a lack of understanding that some amino acids are essential and cannot be made by the body.
- (c) Most candidates were able to name at least two different foods which are a good source of low biological value protein. Credit was not given for naming two of the same type of food.
- (d) Most candidates gained at least one mark for naming an enzyme which breaks down protein in the digestive system. Most commonly named were pepsin and trypsin.

##### **Question 3**

- (a) Most candidates correctly defined a monosaccharide as a simple sugar.
- (b) Many candidates correctly named glucose and fructose as monosaccharides.

##### **Question 4**

- (a) A good proportion of candidates correctly gave thiamin as an alternative name for vitamin B<sub>1</sub>.
- (b) Most candidates correctly answered that a deficiency of vitamin B<sub>1</sub> can lead to the disease beriberi.
- (c) Many candidates correctly gave named wholegrain cereals or products, offal, milk, fish, eggs and pulses amongst a list of possible sources of vitamin B<sub>2</sub> (riboflavin). Some failed to achieve the mark as they gave meat which was too vague.
- (d) A good proportion of candidates knew that Vitamin B<sub>3</sub> is also known as nicotinic acid.
- (e) Some candidates confused the effects on health of a prolonged deficiency of vitamin B<sub>3</sub> with other B group vitamins. Correct answers included dermatitis, dementia, diarrhoea and pellagra.

##### **Question 5**

In the main this question was well answered with many candidates achieving good marks by stating that factors which affect the energy needs of a person include age and gender, how much activity was engaged in, the type of work done such as manual or sedentary, the health status and some candidates even mentioned climate as a factor.

### Question 6

- (a) It was well known by the majority of candidates that the mineral iron is required for the formation of blood cells.
- (b) Most candidates correctly answered that vitamin A is required for the production of visual purple.
- (c) Most candidates correctly named either vitamin C or vitamin K as being required to help wounds heal.
- (d) It was well known that vitamin D is required in aiding the absorption of calcium. Some candidates named the mineral phosphorous as performing this function which was also credited.
- (e) A small number of candidates were able to name iodide as the mineral needed for the production of the hormone thyroxine.
- (f) It was not well known that to prevent megaloblastic anaemia vitamin B<sub>12</sub> is required.

### Question 7

This question was answered well with a good proportion of candidates gaining at least four of the available marks. Correct responses showed knowledge of the ileum being part of the small intestine measuring between 2–4 metres. Many candidates gave a detailed description of the surface of the muscular walls being folded to increase surface area and covered with villi and each villus held a lacteal at its centre which is surrounded by blood capillaries. A few candidates included a labelled diagram which was also credited.

Some candidates did not read the question correctly and gave a description of the digestive processes and named enzymes found in the ileum; although correct, these answers could not be credited as the expected response was regarding structure not digestion.

## Section B

### Question 8

- (a) Candidates generally gave little relevant nutritional information in responses to this question. It was expected that nutrients contained in fruit would be identified and an explanation of the function performed in the body by the nutrient would be stated.
- (b) (i) Candidates showed a lack of knowledge of the principles of preservation. It was expected that candidates would show an understanding that boiling fruit when making jam helps prevent spoilage by destroying enzymes and microorganisms.
  - (ii) Only a small number of candidates were able to show understanding that a high concentration of sugar helps prevent spoilage by inhibiting the growth of microorganisms.
  - (iii) Most candidates were unable to explain that sealing jars helps prevent spoilage by stopping the re-entry of microorganisms.
- (c) Many answers to this question were repetitive or lacked specific illustrative responses. It was expected candidates would demonstrate their knowledge of the versatility of fruit by including examples of the use of named fruit in drinks, cold desserts, soups, main courses, fillings or decorations for baked products or other appropriate named dishes which form components of family meals. A number of responses did not realise that different uses of fruit were required and simply listed more hot dessert type dishes or did not provide named examples of suitable dishes.
- (d) Many candidates provided at least two correct points to consider when choosing fresh apples in a market. Popular correct responses included checking for obvious signs of damage, insects, mould or bruising.
- (e) (i) Many candidates achieved full marks for this question by correctly stating that dried is easy to store as it requires no specialist storage, it has a concentrated flavour and is useful for baking and needs no preparation, it has a long shelf life and is available all year round.

(ii) Many candidates stated that some of the disadvantages of using frozen fruit are that it needs time to defrost and there may be vitamin, flavour and texture loss. Few noted that it is necessary to have a freezer to keep it in or the choice of type of fruit is limited or that frozen fruit may be more expensive to purchase.

(f) Few candidates achieved more than two marks on this question. There was a lack of knowledge of the methods which can be used to prepare and freeze strawberries. A large number of candidates described how strawberries should be blanched or even made into jam and then frozen in the jars.

It was expected answers would show knowledge of the process of selecting fruit in peak condition then washing and removing the stalk and hull followed by either open freezing, cooking and cooling rapidly or packing prepared strawberries in airtight containers with sugar or syrup.

### Question 9

- (a) Many candidates were able to give clear instructions for making shortcrust pastry and gained high marks in this question.
- (b) The majority of candidates correctly stated that pastry should be left in the fridge to either prevent melting of fat or relax gluten.
- (c) A high proportion of candidates were able to name two herbs which could be added to vary the flavour of the pastry. Most popular responses were parsley, rosemary, sage and thyme.
- (d) Only a small number of candidates were able to give more than one or two rules to follow when rolling pastry. Among acceptable answers were not to use too much flour for dredging, not to turn the pastry over, not to over-handle, to roll using short, forward strokes in one direction only and turn the pastry round for even rolling.
- (e) (i) Many candidates named either carrot or beetroot as a suitable root vegetable to add to the pie filling. Some candidates incorrectly named potato which is a tuber although credit was given for naming sweet potato which is a root vegetable.
- (ii) The most popular suitable bulb vegetable suggested to add to the pie filling was onion. Other acceptable responses could have been garlic or leek.
- (f) The majority of candidates correctly named flour as the ingredient in the chicken pie which causes dextrinisation.
- (g) It was expected that candidates would name the chicken or the milk in the white sauce or the white sauce itself as components of the recipe which could be changed to make the pie suitable for a vegan. Suitable replacements for the chicken should have used a low biological protein, such as named nuts or pulses, or a high biological protein, such as soya in some form. If Quorn was named it was expected that candidates would acknowledge it was vegan Quorn.

Suitable replacements for the milk in the white sauce could have been milks such as soy, oat, almond, coconut or rice. Water was not credited as an acceptable substitute.

Some candidates gave tomato, curry or vegetable sauces as variants of the white sauce.

## Section C

### Question 10

- (a) This question was the most popular choice for Question 10.

Many very good answers were given by candidates suggesting a wide range of ways to be economical when shopping for food. Candidates recommended buying products in bulk, when there were special offers available or when food was in season. Others suggested checking best-before dates so less waste by not being able to use the products within the specified time-frame. Many advised buying foods in markets instead of supermarkets and to compare prices in different shops. Few candidates explained that cheaper sources of HBV protein foods, for example milk and eggs are a good option, and that complementary proteins could be used because plant sources of LBV protein are cheaper than meat and fish. A few candidates suggested that a shopping list should be taken and that it can be useful to compare prices in different shops.

When discussing ways to be economical when cooking family meals, candidates often mentioned the importance of avoiding waste by cooking only the required amount of foods or by using up leftover food in other dishes. The use of pressure cookers, steamers and microwave ovens was mentioned, and it was well known that making use of convenience foods could save fuel. Some candidates correctly noted that fuel could be saved by cooking foods when required so that additional fuel is not used when re-heating. Many candidates recommended that more than one dish could be cooked in the oven at the same time. It was seldom mentioned that flames should not spread beyond the base of a saucepan and that lids on pans prevent heat loss or to make use of residual heat.

Candidates who planned their answers carefully usually gained high marks because they used the specification as a checklist, to ensure they covered all the points.

Some of the answers were not focussed on the question. Some candidates provided a great deal of information on the preparation and cooking of green vegetables to retain vitamin C or providing meals for family members specific to their particular needs. None of these facts could be credited.

- (b) Fewer candidates chose to answer this question.

The majority of candidates could give some benefits of the additives, but some answers were too verbose with not enough precise, specific information provided. Few achieved good marks and it was quite clear that this area of the syllabus was not well known.

In some answers there was some confusion over the different types of additives. Some did not discuss the question but simply put down statements without explanation.

# FOOD AND NUTRITION

---

**Paper 0648/12**  
**Theory**

## **Key messages**

Questions requiring simple, straightforward answers were generally answered well.

In order to perform well on the higher mark questions, candidates need to give reasons, explanations and examples in their answers. They should be able to demonstrate their ability to select appropriate information and to tailor their answers to the questions set.

Careful note should be taken of introductory words and sentences in the question as these establish the type of information required in the answers.

Questions which require discussion should include several different facts, with detailed reasons and examples to illustrate the points made.

Topics for further teaching are function of nutrients and choice of kitchen equipment.

## **General comments**

Candidates had sufficient time to answer the required number of questions and, in general, were able to give factual answers to direct questions.

There were a few areas of the paper which required a detailed understanding of the science of the subject, and so stretched the more able candidates. Those candidates who were able to gain high marks, indicated a sound knowledge and understanding of the subject and an ability to apply that knowledge to situations presented in the examination. Explanations and examples were often given to illustrate points made. Candidates who performed less well relied on being able to recall facts, but further information given in answers suggested a lack of understanding.

Some answers suggested that candidates need to carefully read the whole question before beginning to answer and plan responses with appropriate information.

Centres are encouraged to prepare candidates for this component by ensuring that they have a full understanding of the requirements of different question types: identify, name, state, give, describe, discuss and explain. Often, candidates had difficulty in achieving the full marks for questions asking for an explanation, because answers were not supported with relevant examples or reasoning.

Additionally, some of the technical questions relating to food products and nutritional understanding were lacking, incorrect or vague. Centres should focus on technical understanding to enable candidates to access the higher marks.

### **Comments on specific questions**

#### **Section A**

##### **Question 1**

- (a) Most candidates attempted to answer this question but with varying degrees of success. Many were not able to gain the mark as mention was not made of energy or the answer more reflected on the digestive process. It is essential that candidates give a precise explanation when defining basic nutritional terms.
- (b) Few candidates were able to answer this question well. Many demonstrated a lack of knowledge and understanding of this nutritional term. Many students indicated that basal metabolism is energy used but did not mention it was the minimal amount needed for the body to survive.
- (c) A good proportion of candidates knew that iodide is the mineral which is used to make thyroxine, though many simply guessed as responses included water and protein.

##### **Question 2**

- (a) Many candidates correctly explained that high biological value protein contains all essential amino acids. Some candidates referred to high biological value protein as containing all essential proteins rather than essential amino acids, and many just stated that high biological value protein was animal based so could not be awarded the mark.
- (b) Generally, candidates explained that low biological value protein lacks at least one essential amino acid. Some could not be credited as they omitted to say essential amino acids or simply stated that low biological proteins were plant based.
- (c) Very few candidates achieved full marks. Many gave repeated types of food when the question asked for different foods. The most popular responses were meat, milk, cheese, eggs, chicken and fish. Occasionally soya, liver and seafood were seen.

##### **Question 3**

- (a) (i) Many candidates were able to give the correct response.  
(ii) Many candidates were able to give the correct response.
- (b) Very few candidates achieved the full two marks for this question. Some appeared to guess answers and wrote a range of incorrect responses.
- (c) On the whole many candidates were able to identify at least one health problem. Correct responses seen were frequently obesity and tooth decay. Many stated diabetes rather than Type 2 diabetes, and sometimes CHD and hypertension were given.
- (d) It was expected that candidates would identify several ways of reducing sugar in the diet. The majority of candidates only achieved two or three marks as the responses were vague, for example eat less sugar, drink fewer fizzy drinks, do not add sugar to food. Very few candidates referred to 'sugar free' products, low sugar soft drinks, not buying sugar-coated breakfast cereals or looking at labels for the sugar content. Many candidates referred to eating fruit but did not qualify this by stating instead of sweets or sugary desserts. Quite frequently candidates referred to using honey or brown sugar which could not be credited as this practice is not a way of reducing sugar in the diet.
- (e) Many candidates achieved at least two marks by stating the effect of dry heat on sugar is that it melts, becomes brown and caramelises. Only a small number of candidates gained the third mark as many referred to the sugar burning or becoming black but omitted to state this occurred through prolonged heating. Some lack of knowledge was shown as some candidates wrote caramelisation, gelatinisation and dextrinization with the hope at least one of the terms would be correct.



#### Question 4

Only a small number of candidates were able to perform well on this question. Some candidates suggested drinking water or just stated eat food high in NSP but with no qualifying product suggestions provided. Some stated eating cereals or wheat flour but failed to clarify that these should be whole grain or wholemeal types. A few candidates had failed to read the question carefully and provided quite detailed points on the function of NSP in the body which could not be credited even if correct. The most common responses included adding fruit, vegetables, nuts or pulses to the diet.

#### Question 5

Very few candidates managed to achieve the full four marks available. Sometimes beriberi was correctly identified whereas pellagra was not often seen. Occasionally beriberi and pellagra were the wrong way around in the boxes. Weaker candidates stated blindness or purple vision for vitamin A or put the same answer, e.g. rickets, in each of the boxes. Other incorrect responses seen were anaemia, kwashiorkor, dry skin and goitre.

#### Question 6

- (a) Many candidates gave vague answers to this question, e.g. good in colour, dry leaves. Common responses included not infected with insects, leaves not wilted, occasionally mention was made of avoiding rotten vegetables or those with yellow or brown leaves and no use of pesticides. Very few mentioned cost, choosing seasonal or locally produced vegetables. Quite a few candidates stated buying vegetables with their roots intact or buying clean vegetables that are free from soil which could not be credited as the question was about green leafy vegetables.
- (b) It was anticipated that candidates would show their understanding of how water-soluble vitamins contained in green leafy vegetables are lost if stored incorrectly. Expected answers ranged from avoiding exposure to air, storing in a dark, cool, dry place and not washing prior to storage. Most candidates knew to store the vegetables in a cool place or in the refrigerator, but some answers resembled the preparation of green vegetables for cooking which possibly suggests the question was not read correctly. Credit was awarded to those candidates who explained why the conditions they advised would retain the nutritional value of the vegetables using technical terms such as leaching and oxidation.

### Section B

#### Question 7

- (a) The majority of candidates correctly named whisking as the method used to make a Swiss roll. The most common incorrect response was creaming method.
- (b) Many candidates showed they knew the method of making the Swiss roll mixture and carefully described the correct processes involved. A good proportion of candidates gained full marks for their answers.

In contrast some candidates' responses referred to a process in the whisking method but failed to provide the technical word, e.g. beat eggs and sugar not whisk eggs and sugar, or did not fold in the flour but whisked it in. Sometimes candidates separated the egg yolks and whites and whisked the whites until like a meringue, added the sugar and then the flour. Flour was not well added to the egg and sugar mixture as candidates either added it all in one go or whisked in the flour using an electric whisk or used a wooden spoon to beat in the flour.

Many candidates included information on greasing and lining the tin, adding the mixture and baking instructions including the temperature of oven and time of baking. A few candidates also started the instructions with steps on weighing the ingredients and also completed the Swiss roll by providing instructions on filling with jam and cream and rolling it up. None of these descriptions, even if correct, were awarded marks as they were not asked for in the question.

- (c) Many of the candidates were able to identify at least one ingredient that could be used to vary the flavour of the Swiss roll. The most popular responses were vanilla essence, cocoa powder and chocolate. The most common mistake was that fillings were suggested.



- (d) Few candidates gained more than one mark on this question. Many were able to state that the mixture had either been under or over whisked.
- (e) Many candidates' responses were not relevant to the question. Some candidates considered trying the mixer before buying it, checking to see if there was a broken wire or plug or if it had rust which suggests they may have been referring to purchasing a second-hand mixer. Some candidates discussed the benefits of having an electric mixer when making a cake which again was not relevant to the question.

Many answers were vague and lacked detail, some candidates even provided single word responses, and so could not be credited.

A high proportion of those who attempted an answer referred to colour, cost and brand.

- (f) It was well known that electrical equipment must only be used if hands are dry to prevent electric shocks. Some candidates correctly stated that those using electrical equipment must follow the manufacturer's instructions and must know how to use the equipment properly. Many answers warned of the dangers of frayed or bare wires and emphasised that repairs should only be carried out by a qualified person. Better performing candidates noted that the power must be switched off and the plug removed after use and that beaters should only be removed when the power is off whereas vague responses, e.g. switch off after use, were not credited. A number of answers included instructions to avoid having flexes trailing to avoid trips and falls. No credit was given for points about the storage of electrical equipment since the question referred to its safe use only. The main comment that did not gain marks referred to not using for too long because it will overheat or catch fire.
- (g) A small number of candidates were able to achieve all available marks for this question. Many candidates did not know the correct first aid procedure in the event of an electric shock. Candidates tended to refer to not putting water on the person or giving them a drink, bathing the shocked area in water, some suggested the person was moved away from the electrical appliance with a stick not the appliance moved away, or the person should be poked with a stick to see if they were breathing. Most marks were awarded for seeking medical help from a hospital. Very few said to isolate the power before touching a patient. Several understood that certain materials were non-conductors.

### Question 8

- (a) The majority of candidates were able to identify at least two correct conditions needed for the growth of microorganisms. The most common answers were food and moisture. Many candidates did not gain the third mark as they stated temperature or heat instead of warmth. A few candidates described points like not storing food in the refrigerator, food left uncovered or not cooked properly which were not credited.
- (b) (i) Most candidates gained the available mark for stating that equipment is sterilised to destroy any harmful bacteria or microorganisms. Answers which included the term 'germs' were not credited.
- (ii) Many candidates did not attempt this question. A few candidates were able to identify lactic acid being produced and occasionally 'to thicken' or 'flavour' was seen. Sometimes candidates referred to the milk being allowed to cool so that the microorganisms added would not die which was not credited.
- (iii) Many candidates gave responses that referred to helping to keep the product longer, make it safe to eat or just stated that a stabiliser helped stabilise the yogurt. It was expected that candidates would state that a stabiliser helped to improve the texture of the yogurt by increasing firmness and preventing separation.
- (c) (i) When answered correctly the most common responses seen were a list of ingredients on a label helped the consumer to know what was being eaten, identify all the ingredients in the product and to identify a food that they may be allergic to. Occasionally there was reference to religion or an intolerance to foods.

- (ii) Candidates tended to give instructions for storing the yoghurt, e.g. store in the refrigerator, or just stated for people to know how to store it, neither of which were credited. Sometimes reference to extending the shelf life was seen. Correct responses were infrequently given.
- (iii) Candidates gave responses that referred to knowing the weight as it needed to be carried home, because you were on a diet so needed to know how much was being eaten or to know how much the yoghurt contains, none of which were credited. Correct responses indicated the weight was important to know how much to buy for a recipe or to compare prices or calculate portions in the product.

### Question 9

In order to achieve high marks to this question it was expected that candidates would provide a justified explanation for each identified point.

Better performing candidates responded with a range of detailed answers whereas weaker candidates simply wrote a brief, often vague, response with no justification.

### Section C

#### Question 10

- (a) This question was the less popular choice for Question 10. It was expected candidates would give a balanced response, tackling both areas of the question equally. It was obvious the candidates knew about both methods of cooking as most were able to describe several individual facts about each method of cooking but did not compare and contrast each method as specified in the question. Most simply wrote some facts about grilling followed by some facts about stewing but failed to identify where there was a contrast in the methods. An example of this would be where grilling was referred to as a dry method of cooking but in the stewing section no mention of stewing being a moist method of cooking was seen. Some of the answers were not focussed on the question with candidates referring to the type of people or occasions that the food would be more appropriate for, e.g. stewing for elderly and grilling for parties.
- (b) This question was answered by the majority of candidates. Responses were expected to be a discussion about the role that different religions play in influencing food choices. Responses varied from a short paragraph or bullet point style lists through to the use of all given pages. Points identified needed to be extended and illustrated with examples to show knowledge and understanding. Candidates who planned their answers carefully were rewarded with high marks because they used their plan as a checklist to ensure they covered all the points.

Some of the answers were not focussed on the question, were vague and did not make it clear which religion was being referred to. In many responses there seemed to be a misunderstanding of the concept of religion with candidates providing a great deal of general information about lacto-vegetarians, ovo-vegetarians and vegans as well as referring to Indians and Chinese as religions. When correct responses were seen the most popular religions discussed were Muslim, Hindu, Judaism and Buddhist. Occasionally Christian was referred to by discussing Catholics. Responses tended to refer to not eating a particular meat, being vegetarian, not drinking alcohol and the meat being slaughtered in a particular way. Very rarely were any of the festivals discussed with the exception of Ramadan for the Muslims.

It was expected that candidates would understand that when following a religion, choice of foods may be restricted with some foods being avoided as some religions require that certain foods are excluded from the diet or are eaten on particular religious occasions or festivals. It was anticipated that candidates would refer to specific named religions with examples of the types of foods either eaten or avoided and an explanation provided as to the reason for this.

# FOOD AND NUTRITION

---

**Paper 0648/13**  
**Theory**

## **Key messages**

Questions requiring simple, straightforward responses were generally answered well.

In order to do well on the higher mark questions, candidates need to give reasons, explanations and examples in their answers. They should be able to demonstrate their ability to select appropriate information and to tailor their answers to the questions set.

Careful note should be taken of introductory words and sentences in the question as these establish the type of information required in the answers.

Questions which require discussion should include several different facts, with detailed reasons and examples to illustrate the points made.

Topics for further teaching are food additives and food preservation.

## **General comments**

Candidates had sufficient time to answer the required number of questions and, in general, were able to give factual answers to direct questions.

There were a few areas of the paper which required a detailed understanding of the science of the subject, and so stretched the more able candidates. Those candidates who were able to gain high marks, indicated a sound knowledge and understanding of the subject and an ability to apply that knowledge to situations presented in the examination. Explanations and examples were often given to illustrate points made. Candidates who performed less well relied on being able to recall facts, but further information given in answers suggested a lack of understanding.

Some answers suggested that candidates need to carefully read the whole question before beginning to answer and plan responses with appropriate information.

Centres are encouraged to prepare candidates for this exam by ensuring that they have a full understanding of the requirements of different question types: name, identify, define, state, give, describe, discuss and explain. Often, candidates had difficulty in achieving the full marks for questions asking for an explanation, because answers were not supported with relevant examples or reasoning.

Additionally, some of the technical questions relating to food products and nutritional understanding were lacking, incorrect or vague. Centres should focus on technical understanding to enable candidates to access the higher marks.

### **Comments on specific questions**

#### **Section A**

##### **Question 1**

- (a) The majority of candidates correctly defined the term overnutrition as consumption of excess food or nutrients.
- (b) The majority of candidates correctly stated that one common result of overnutrition is obesity.

##### **Question 2**

- (a) Many candidates gained full marks for giving four functions of proteins in the body. Most popular responses included growth, repair, energy, cell renewal and production of enzymes.
- (b) Many candidates were able to clearly explain that proteins which have a lower biological value lack at least one of the essential amino acids. A small number of answers showed a lack of understanding that some amino acids are essential and cannot be made by the body.
- (c) Most candidates were able to name at least two different foods which are a good source of low biological value protein. Credit was not given for naming two of the same type of food.
- (d) Most candidates gained at least one mark for naming an enzyme which breaks down protein in the digestive system. Most commonly named were pepsin and trypsin.

##### **Question 3**

- (a) Most candidates correctly defined a monosaccharide as a simple sugar.
- (b) Many candidates correctly named glucose and fructose as monosaccharides.

##### **Question 4**

- (a) A good proportion of candidates correctly gave thiamin as an alternative name for vitamin B<sub>1</sub>.
- (b) Most candidates correctly answered that a deficiency of vitamin B<sub>1</sub> can lead to the disease beriberi.
- (c) Many candidates correctly gave named wholegrain cereals or products, offal, milk, fish, eggs and pulses amongst a list of possible sources of vitamin B<sub>2</sub> (riboflavin). Some failed to achieve the mark as they gave meat which was too vague.
- (d) A good proportion of candidates knew that Vitamin B<sub>3</sub> is also known as nicotinic acid.
- (e) Some candidates confused the effects on health of a prolonged deficiency of vitamin B<sub>3</sub> with other B group vitamins. Correct answers included dermatitis, dementia, diarrhoea and pellagra.

##### **Question 5**

In the main this question was well answered with many candidates achieving good marks by stating that factors which affect the energy needs of a person include age and gender, how much activity was engaged in, the type of work done such as manual or sedentary, the health status and some candidates even mentioned climate as a factor.

### Question 6

- (a) It was well known by the majority of candidates that the mineral iron is required for the formation of blood cells.
- (b) Most candidates correctly answered that vitamin A is required for the production of visual purple.
- (c) Most candidates correctly named either vitamin C or vitamin K as being required to help wounds heal.
- (d) It was well known that vitamin D is required in aiding the absorption of calcium. Some candidates named the mineral phosphorous as performing this function which was also credited.
- (e) A small number of candidates were able to name iodide as the mineral needed for the production of the hormone thyroxine.
- (f) It was not well known that to prevent megaloblastic anaemia vitamin B<sub>12</sub> is required.

### Question 7

This question was answered well with a good proportion of candidates gaining at least four of the available marks. Correct responses showed knowledge of the ileum being part of the small intestine measuring between 2–4 metres. Many candidates gave a detailed description of the surface of the muscular walls being folded to increase surface area and covered with villi and each villus held a lacteal at its centre which is surrounded by blood capillaries. A few candidates included a labelled diagram which was also credited.

Some candidates did not read the question correctly and gave a description of the digestive processes and named enzymes found in the ileum; although correct, these answers could not be credited as the expected response was regarding structure not digestion.

## Section B

### Question 8

- (a) Candidates generally gave little relevant nutritional information in responses to this question. It was expected that nutrients contained in fruit would be identified and an explanation of the function performed in the body by the nutrient would be stated.
- (b) (i) Candidates showed a lack of knowledge of the principles of preservation. It was expected that candidates would show an understanding that boiling fruit when making jam helps prevent spoilage by destroying enzymes and microorganisms.
  - (ii) Only a small number of candidates were able to show understanding that a high concentration of sugar helps prevent spoilage by inhibiting the growth of microorganisms.
  - (iii) Most candidates were unable to explain that sealing jars helps prevent spoilage by stopping the re-entry of microorganisms.
- (c) Many answers to this question were repetitive or lacked specific illustrative responses. It was expected candidates would demonstrate their knowledge of the versatility of fruit by including examples of the use of named fruit in drinks, cold desserts, soups, main courses, fillings or decorations for baked products or other appropriate named dishes which form components of family meals. A number of responses did not realise that different uses of fruit were required and simply listed more hot dessert type dishes or did not provide named examples of suitable dishes.
- (d) Many candidates provided at least two correct points to consider when choosing fresh apples in a market. Popular correct responses included checking for obvious signs of damage, insects, mould or bruising.
- (e) (i) Many candidates achieved full marks for this question by correctly stating that dried is easy to store as it requires no specialist storage, it has a concentrated flavour and is useful for baking and needs no preparation, it has a long shelf life and is available all year round.

(ii) Many candidates stated that some of the disadvantages of using frozen fruit are that it needs time to defrost and there may be vitamin, flavour and texture loss. Few noted that it is necessary to have a freezer to keep it in or the choice of type of fruit is limited or that frozen fruit may be more expensive to purchase.

(f) Few candidates achieved more than two marks on this question. There was a lack of knowledge of the methods which can be used to prepare and freeze strawberries. A large number of candidates described how strawberries should be blanched or even made into jam and then frozen in the jars.

It was expected answers would show knowledge of the process of selecting fruit in peak condition then washing and removing the stalk and hull followed by either open freezing, cooking and cooling rapidly or packing prepared strawberries in airtight containers with sugar or syrup.

### Question 9

- (a) Many candidates were able to give clear instructions for making shortcrust pastry and gained high marks in this question.
- (b) The majority of candidates correctly stated that pastry should be left in the fridge to either prevent melting of fat or relax gluten.
- (c) A high proportion of candidates were able to name two herbs which could be added to vary the flavour of the pastry. Most popular responses were parsley, rosemary, sage and thyme.
- (d) Only a small number of candidates were able to give more than one or two rules to follow when rolling pastry. Among acceptable answers were not to use too much flour for dredging, not to turn the pastry over, not to over-handle, to roll using short, forward strokes in one direction only and turn the pastry round for even rolling.
- (e) (i) Many candidates named either carrot or beetroot as a suitable root vegetable to add to the pie filling. Some candidates incorrectly named potato which is a tuber although credit was given for naming sweet potato which is a root vegetable.
- (ii) The most popular suitable bulb vegetable suggested to add to the pie filling was onion. Other acceptable responses could have been garlic or leek.
- (f) The majority of candidates correctly named flour as the ingredient in the chicken pie which causes dextrinisation.
- (g) It was expected that candidates would name the chicken or the milk in the white sauce or the white sauce itself as components of the recipe which could be changed to make the pie suitable for a vegan. Suitable replacements for the chicken should have used a low biological protein, such as named nuts or pulses, or a high biological protein, such as soya in some form. If Quorn was named it was expected that candidates would acknowledge it was vegan Quorn.

Suitable replacements for the milk in the white sauce could have been milks such as soy, oat, almond, coconut or rice. Water was not credited as an acceptable substitute.

Some candidates gave tomato, curry or vegetable sauces as variants of the white sauce.

## Section C

### Question 10

- (a) This question was the most popular choice for Question 10.

Many very good answers were given by candidates suggesting a wide range of ways to be economical when shopping for food. Candidates recommended buying products in bulk, when there were special offers available or when food was in season. Others suggested checking best-before dates so less waste by not being able to use the products within the specified time-frame. Many advised buying foods in markets instead of supermarkets and to compare prices in different shops. Few candidates explained that cheaper sources of HBV protein foods, for example milk and eggs are a good option, and that complementary proteins could be used because plant sources of LBV protein are cheaper than meat and fish. A few candidates suggested that a shopping list should be taken and that it can be useful to compare prices in different shops.

When discussing ways to be economical when cooking family meals, candidates often mentioned the importance of avoiding waste by cooking only the required amount of foods or by using up leftover food in other dishes. The use of pressure cookers, steamers and microwave ovens was mentioned, and it was well known that making use of convenience foods could save fuel. Some candidates correctly noted that fuel could be saved by cooking foods when required so that additional fuel is not used when re-heating. Many candidates recommended that more than one dish could be cooked in the oven at the same time. It was seldom mentioned that flames should not spread beyond the base of a saucepan and that lids on pans prevent heat loss or to make use of residual heat.

Candidates who planned their answers carefully usually gained high marks because they used the specification as a checklist, to ensure they covered all the points.

Some of the answers were not focussed on the question. Some candidates provided a great deal of information on the preparation and cooking of green vegetables to retain vitamin C or providing meals for family members specific to their particular needs. None of these facts could be credited.

- (b) Fewer candidates chose to answer this question.

The majority of candidates could give some benefits of the additives, but some answers were too verbose with not enough precise, specific information provided. Few achieved good marks and it was quite clear that this area of the syllabus was not well known.

In some answers there was some confusion over the different types of additives. Some did not discuss the question but simply put down statements without explanation.



# FOOD AND NUTRITION

---

Paper 0648/02  
Practical Test

## Key messages

- **The inclusion of photographs** as supporting evidence is now being received from the majority of centres. Centres should ensure that none of the dishes are obscured by table decorations, labels or coverings so that they are clearly visible. Candidates should not appear in photographs.
- **All centres** must complete and include the Practical Examiner's Report and checklist with the candidates' work. This can be found in the Confidential Instructions. It includes a record of the dates when the planning and practical tests were carried out, a seating plan and the opportunity for the Practical Examiner to report any difficulties that may have occurred during the Test.
- For each examination session centres should download and use the most recent forms; these are available from the Samples database on the Cambridge International website. The interactive summary mark sheets and working mark sheets will automatically total the marks and scale correctly.
- In larger centres, where there is more than one Examiner involved in marking the practical tests, internal moderation should take place. The sample provided for external moderation should then include marked work from each person involved in the marking process. When choosing a sample for moderation, the work of candidates with the lowest marks, the middle marks and the highest mark should be included, with an even spread of work in between. Work for each test allocated should be included. Where there are several candidates with the same scaled mark, more than one of these should be included.
- Examiners should refer to the Practical Test Handbook, available from the Cambridge International website and ensure that the mark scheme is accurately, rigorously and consistently applied across the cohort. All Examiners should refresh their knowledge of the instructions and mark scheme frequently.

## General comments

Many centres required no adjustments to marks awarded, and most adjustments made were minimal. Only in a few cases were adjustments of more than 10 per cent required, with a small number of centres producing inaccurate or inconsistently marked work.

The most successful centres presented work of a good standard where candidates have been very well supported enabling them to show their achievement through well directed teaching and submit interesting and varied work which met the assessment criteria. However, in some centres, candidates often chose low-skill dishes or ones which did not meet the requirements of the test. It is disappointing to see centres where candidates have made the same or similar dishes to one another regardless of the allocated test. The tests are differentiated to allow candidates to demonstrate their ability to interpret a brief, apply theoretical knowledge to the practical and to plan menus creatively. Candidates generally need more guidance and practice with menu planning and meeting nutritional needs so that they can accurately answer the demands of the test allocated whilst demonstrating sufficient skills in using a wide range of ingredients, manipulation of various mixtures and different cooking methods that make full and sensible use of the oven, grill and the top of the cooker. This does rely on the expertise of their teachers. Candidates should show regard for the 'theme' of the test when planning their final displays; for example, food for a party needs a party table setting, whereas food for a main meal needs a different but appropriate setting, food for a packed meal needs to be served as such and so on. Candidates need to write their choices in order of the test and clearly indicate which dish is for which part of the test. These should then be annotated by the Examiner with marks awarded for each choice of dish. All of the planning should be clearly and concisely annotated using the key provided in the Handbook. Examiner annotation should be in a different coloured pen so that it stands out from the candidates' work.

Centres are reminded that preparation sheets should be fastened together with staples or treasury tags in the correct order along with the Examiners mark sheet and the photograph. Marks should be carefully totalled, scaled and transferred to the summary sheet. These marks must be checked by another person for

accuracy. Half marks should be avoided, where possible, as this can lead to over-marking the work. Where half marks do appear in the final total, these should be rounded down, not up. There is a useful conversion table in the Handbook as well as the interactive forms on the website.

It is a requirement that all candidates' work must show evidence of marking, with annotation clearly written on the work, to evidence how and where marks have been awarded or reduced. There were excellent examples of marking in many centres, with clear, accurate and helpful annotation. In a few centres, Examiners failed to annotate in sufficient detail – some did not provide any commentary at all – and this makes the moderation process extremely difficult. Detailed annotation both on the front sheets and within the work itself ensures that moderation is both fair and consistent. This series yielded a number of candidates not producing or not serving one or more of their planned dishes. Where this occurs, the reasons for the omission must be clearly recorded as marks are affected differently, depending on whether the dish was attempted and abandoned during preparation and cooking; or whether it was not attempted at all. Candidates need careful preparation for the Practical Test and they would benefit from some practice with cooking more than one dish at a time so the skill of dovetailing their work is developed prior to the test.

Centres should note that for the purposes of the practical test, a balanced main meal consists of two skilful dishes and at least two suitable accompaniments. The two skilful dishes can either be a starter and a main course; a main course and a dessert or two complementary main dishes. This year, some candidates mistakenly planned two main course dishes that were not complementary to a specific meal and this resulted in menus that were too heavy in carbohydrate and/or protein.

It was clear that many candidates had tried hard to plan appropriate menus in response to the test questions. They had made a good effort to display their final dishes attractively. The main issues lie in the interpretation of the test requirements and ensuring the planning is more accurate. Candidates should be encouraged to make more suitable choices which fulfil the test requirements, and which demonstrate the use of a range of ingredients, skills and a variety of cooking methods. They need to make skilled and complex dishes which demonstrate their knowledge of consistencies and cooking methods and which require a range of manipulative skills. Candidates who are aiming for high grades should be making their dishes from scratch and keeping the use of convenience foods to a minimum unless the test asks for them. Centres are again reminded that drinks should not be made, unless specifically required and cannot be awarded any marks in the test.

Good practice was seen in centres where candidates listed their dishes clearly for **(a)** and **(b)** and indicated which dishes include particular ingredients or methods required by the question. Examiners are reminded to indicate on the choices sheet how many marks have been awarded for each individual dish with justification given on the mark sheet. In the main, marks for choices were awarded accurately and fairly, with some exceptions. If a dish is awarded 4 marks for Choices, it should be marked out of 7 for Results; conversely any dish with marks reduced to a maximum of 3 in Choices for low skill level should then be marked out of maximum 5 for Results.

Planning should include brief but accurate details of preparation and cooking methods, cooking times and oven temperatures. Candidates should indicate on their time plans how they will test that each item of food or recipe is cooked – for example they should state that a sponge cake would be baked until 'golden brown and springy to touch', pasta 'cooked until al dente'. There were many good examples of 'dovetailing'. This is a complex skill that allows candidates to show how, while one dish is cooking, another is being prepared or decorated. Candidates should use dovetailing to demonstrate the efficient use of time and to allow them to make dishes of a higher skill level within the time allowed; and where dovetailing is not evident, the maximum marks available for the time plan are 5. Time left at the end of a plan indicates a lack of skill in the dishes chosen or errors in timing for other processes. Some of the plans were written over too many pages. The maximum should be two and any extras should mean that marks are adjusted as it is an indication of too much detail being put into the time plans. Time plans should indicate sufficient work to fill 150 minutes; no less and no more.

The marks for the final results section were often a little generous considering the number of incorrect or low skill dishes. Where this is the case the total number of marks should be reduced. For incorrect dishes a maximum of 3.5 marks and for low skill dishes 4 or 5 maximum should be awarded, depending on the dish.

Where candidates fail to make or serve a planned dish, marks for method of working as well as serving and appearance must also be reduced – marks cannot be transferred to other dishes.

## Comments on specific questions

### Test 1

**Most centres chose this test.** The best choices for the balanced meal for young children in **(a)** indicated a well-balanced meal that demonstrated a variety of textures and flavours that would appeal to younger-aged children. Many candidates planned suitable meals but forgot to scale the portion sizes accordingly and this omission was rarely recognised by Examiners. Packed meal dishes for **(b)** were varied and candidates should be reminded to take care to plan dishes that are easily transported and suitable for eating cold.

### Test 2

This was a popular question and many candidates demonstrated a good range of skills. However, menus for parties need to be planned with a balance of savoury and sweet dishes and the dishes chosen should complement each other for a party menu where it is likely that guests will each take a small portion of every dish. As with all tests, cakes must be neatly and skilfully decorated in order to gain full marks. Cakes sprinkled with nonpareils or dusted with icing sugar do not count as 'decorated'.

### Test 3

Very few centres chose this test, suggesting that the dietary requirements of a person with coeliac disease were not well understood by candidates. As part of the 0648 syllabus, nutritional and dietary requirements of a range of groups should be included in the teaching.

### Test 4

For **(a)**, candidates needed to be careful not to repeat cheese in more than one dish. The dishes planned for demonstrating cheese could be savoury or sweet; however, most candidates chose macaroni cheese as the firm favourite. In several centres, candidates repeated cheese in as many as four of their five choices, losing marks for repetition. In **(b)** candidates generally made suitable choices for batch of scones (except where cheese scones were made) and batch of small cakes. The cakes needed to be decorated to gain full marks.

### Test 5

This was another popular choice and there were some good examples of well-balanced meals in **(a)** where the majority of candidates had shown in their planning that they understood that manual workers require more energy in their meals than sedentary workers, for example. There was some confusion around the use of a 'local fruit' for **(b)**; this refers to a fruit grown in the local region. Where possible, candidates should make use of seasonal and locally produced fruit and vegetables in their menus and should be credited when they do this.

### Test 6

Although few centres allocated this, it tested the candidates' knowledge of specific ingredients and there were suitable choices made in response. The best work was from candidates who used the specified ingredient accurately as an integral part or main feature of the chosen dish. For this type of question, the dishes all need to be complex and skilful. Where candidates choose dishes that would normally be served as accompaniments, for example, this generally reduces that skill level and marks should be adjusted accordingly. Candidates must also take care not to repeat methods used in the different dishes. For **(b)**, the melting method referred to dishes where sugar, fats and syrup are melted together before adding to dry ingredients. Good choices for this method include gingerbread or biscuits. Flapjack was chosen by some and skills for this elevated by the addition of extra ingredients or toppings.

### Test 7

This question was quite a popular choice and several candidates wisely chose dishes that demonstrated skilful use of the chosen pieces of equipment. However, main ingredients were often repeated, usually cheese and chicken, which featured in several dishes per menu. There were some repeats between parts **(a)** and **(b)**. Once again, candidates do need to ensure that cakes are skilfully decorated to gain full marks.

## Test 8

This was not a popular choice and produced mixed results. Some candidates demonstrated a good understanding of cooking methods, making suitable choices for their menus; others chose low-skilled simple grilled dishes or were confused about methods such as stewing. Some candidates confused cooking methods and methods of preparation. Some good choices for dishes made with pulses were made and where these were simple, such as soups, candidates could have added accompaniments to elevate the skill level of the dish. Most candidates correctly chose a Swiss roll, sponge cake or Genoese cake for the whisking method.