

FOOD AND NUTRITION

Paper 0648/01

Theory

General comments

Although the range of marks gained in this paper was wide there were many outstanding scripts. Many candidates demonstrated a sound knowledge and understanding of the subject and were able to apply that knowledge to a range of questions. Explanations and examples were given where appropriate although weaker candidates tended to give facts without further information. Their answers were often very brief and essays showed little or no evidence of planning.

Candidates seemed to have had sufficient time to answer the required number of questions. There were few rubric errors. Handwriting was generally good although there were occasions when scripts were difficult to decipher because the candidate's writing was too small. Scripts were neatly presented and candidates seemed to have made good use of both mark allocations and the amount of space provided for answers.

Comments on specific questions

Section A

Question 1

- (a) Candidates knew that fat is composed of carbon, hydrogen and oxygen.
- (b) It was well known that carbohydrate and protein also supply energy.
- (c) Many candidates gave the required number of different uses of energy. Some noted that energy could be mechanical, electrical, chemical and energy in the form of heat. Other answers were examples of ways in which energy is used. Credit was given for whichever approach was taken.

Question 2

- (a) Most candidates were able to give at least two functions of vitamin A. It was usually stated that vitamin A is responsible for the formation of visual purple which aids vision in dim light. It is also associated with the formation of healthy skin and of mucous membranes, helping to resist infection. A few candidates correctly noted that vitamin A is an antioxidant.
- (b) Sources of vitamin A were well known and full marks were often gained. Milk, cheese and butter, carrots and green vegetables were usually mentioned. Credit was given to those who included oily fish or a named example, and for identifying fish liver oil as a source. No mark was given for naming fish as an example of a source of vitamin A; oily fish was expected.
- (c) Night-blindness was known to be the deficiency disease associated with vitamin A.
- (d) The majority of candidates were able to state that vitamin D promotes the absorption of calcium and that it is important for the formation and maintenance of bones and teeth.
- (e) The most frequently mentioned sources of vitamin D were milk, cheese and butter, oily fish and fish liver oil. It was well known that ultra violet rays from sunshine help the body to produce vitamin C.
- (f) Rickets, osteomalacia and osteoporosis were accepted as deficiency diseases associated with vitamin D.

Question 3

- (a) There were many excellent descriptions of the digestion of fat in the duodenum.

Some candidates, however, were unable to restrict their answer to the digestion of fat and gave information on the digestion of all nutrients. It was expected that mention would have been made of bile and its role in the emulsification of fat, increasing the surface area. It was important that candidates identified lipase, from pancreatic juices, the enzyme responsible for the breakdown of fat into glycerol and fatty acid.

- (b) Candidates were often less able to describe the absorption of fat in the ileum. It was usually stated that lacteals in the villi absorb glycerol and fatty acids. It was less well known that lacteals are connected to the lymphatic system and that glycerol and fatty acids recombine to form fat which then mixes with lymphatic fluid and joins the blood circulatory system. No credit was given for giving information on the absorption of these nutrients.

Question 4

- (a) It was encouraging to note that the majority of candidates were able to give a good account of the importance of Non-Starch Polysaccharide. It absorbs water in the colon, making faeces soft and bulky, it binds food residues and stimulates peristalsis and helps to prevent constipation and other diseases of the digestive tract. Some candidates correctly noted that it helps to remove toxins and reduces the cholesterol level in the body.
- (b) The most frequently named sources of NSP were wholegrain cereals, brown rice, green vegetables, pulses and nuts. There were, however, many other valid examples.

Question 5

- (a) Water has many uses in the body so there were many possible answers. Water forms part of the protoplasm in cells, making up 70% of the body; it is a constituent of body fluids such as blood and saliva; it maintains body temperature by the cooling effect of perspiration and it helps to eliminate waste from the kidneys. There were several other correct answers indicating a sound understanding of the importance of water.
- (b) It was well known that the result of a deficiency of water is dehydration.
- (c) Headaches, thirst, dizziness and lethargy were some of the symptoms of dehydration mentioned.
- (d) Most candidates mentioned manual workers and athletes as examples of groups requiring additional water because they lose water when perspiring. Some candidates noted that lactating mothers require additional water for the production of milk; others knew that those who live in hot climates need water to keep cool. Occasionally it was correctly stated that people suffering from fever, diarrhoea or vomiting need to replace the water they have lost.

Section B**Question 6**

- (a) Many candidates gave five excellent points to consider when planning meals. Consideration of time, money and equipment were frequently noted and the age, health and activity of those taking the meal was acknowledged. The need to include a variety of colour, flavour and texture in the meal was also mentioned.

There were many possible answers and credit was given whenever appropriate.

Some candidates restricted their answer to the need for particular nutrients although the initial statement was that all meals should be balanced.

- (b) The needs of pregnant women were well understood. It was often correctly stated that less fat in order to avoid the risk of obesity, and that NSP is important so that constipation is not a problem. Other nutritional requirements noted included protein, calcium, vitamin D, iron, and vitamin C. It was expected that the reason for the inclusion of each nutrient mentioned would be given.
- (c) There were many sound explanations of the problems associated with a diet high in fat. Excess fat is stored under the skin as adipose tissue, or it accumulates around internal organs. This leads to weight gain or, if the amount of extra weight is excessive, to obesity. Problems such as hypertension, arthritis and diabetes may follow. Cholesterol levels are raised if the consumption of saturated fat is high. This is deposited on the inner walls of arteries making them narrower. Sometimes arteries become blocked, interrupting the flow of oxygen around the body. This may result in coronary heart disease or stroke. Credit was given to any relevant information on the problems of a diet high in fat.

Question 7

- (a) There were many disappointing responses on the different uses of sugar in the preparation of dishes. Most candidates noted that sugar gives a sweet flavour and appropriate examples of the use of sugar for sweetening were given. Some candidates correctly stated that a high concentration of sugar is responsible for the preservation of fruit in jam-making and that sugar can be used for decoration cakes, perhaps in royal icing or butter icing. It was sometimes stated that sugar, when heated, forms caramel which can be used in confectionery or in desserts like crème caramel. A few answers highlighted the fact that yeast feeds on sugar at the beginning of the fermentation process when bread-making. It was hoped that mention would be made of the use of sugar for aerating when creamed with margarine but this rarely happened.
- (b) Many candidates failed to answer the question correctly and gave a list of instructions for making shortcrust pastry. There were, however, some very good answers. Rules and reasons were given to cover each stage. Reasons for sieving flour, using fingertips for rubbing in and for handling pastry lightly were usually given. Candidates noted that pastry becomes tough if it is handled too much or it is turned over when rolling out. There were many possible rules and reasons but the majority of candidates gave only two or three rules.
- (c) Many candidates had a sound understanding of the ways in which HBV protein can be obtained by vegans. It was well known that the soya bean is the only vegetable source of High Biological Value (HBV) protein and that HBV protein can be obtained when two Low Biological Value foods are eaten at the same meal. The majority of candidates correctly identified this as complementation. Soya products, for example flour, tofu and milk, were often noted, and reference was frequently made to Textured Vegetable Protein (TVP) which can be made to resemble the texture of meat.

Question 8

- (a) Most candidates were able to name at least four of the nutrients in fish. Full marks were frequently scored.
- (b) Since there are several methods of preserving fish it was expected that most candidates would have been able to name at least three of them. Drying, salting and canning were the most frequently given answers although freezing, smoking, pickling and vacuum packing were sometimes named. The principles of each of the methods of preservation were less well known. It was hoped that candidates would be able to state that freezing relies on the fact that bacteria are dormant at low temperatures and that when the water in food is frozen it is unavailable to bacteria for growth. In salting, water is removed by osmosis, water is evaporated during drying, and in canning, bacteria are destroyed by heat. Bacteria cannot gain access to the food in the can because of the airtight seal. It was rarely noted that in pickling, the acid conditions created are unsuitable for bacterial growth.

- (c) Most candidates were able to give at least one reason for coating some foods before frying. Only very few managed to give three reasons. The best answers mentioned that coating prevents food from the intense heat of the fat so avoiding over cooking, it prevents the absorption of fat by the food and the breaking of food, and allows moisture and juices from the food to be retained.

Batter, egg and breadcrumbs or egg and seasoned flour were the usual examples of coatings.

This part of the question concerned safety when frying but many candidates gave points on kitchen safety and food hygiene. Only those points related to frying were credited and full marks were awarded when points were supported with reasons. It was well known that fat or oil should not be overheated because it could ignite, and many candidates noted that food should be placed into the fat with care to avoid splashing. Other valid points were that pans of oil should not be left unattended and that both food and equipment should be dry. Some candidates noted that the pan for deep-frying must not be more than half full to avoid overflowing when food is added.

There were many possible answers and full marks were often awarded for this section.

Section C

Question 9

Many candidates chose to answer this question but there was often little evidence of planning. Questions in this section of the paper give candidates the opportunity to interpret questions and to demonstrate their knowledge and understanding of particular topics. The focus of this particular question was food safety when preparing, cooking and serving food.

Candidates are to select appropriate information and to tailor their answer to the question. It is essential that answers give facts, explanations and examples where appropriate.

Personal hygiene and kitchen hygiene were discussed well as was the need to avoid insects and animals in the kitchen. Some candidates stated the conditions required for the growth of micro-organisms. This was useful because it could be referred to throughout the answer. Most candidates noted the importance of clean containers and suggested that food should be stored in the refrigerator until needed. Cross-contamination was a frequently used term although some candidates simply stated that certain actions would prevent bacteria. More precise information is required in essays. Reference was often made to the need to store raw and cooked foods separately. However, descriptions of a variety of methods of preservation were not appropriate.

The majority of candidates mentioned the need to ensure that all equipment used is cleaned thoroughly before and after use. The importance of separate equipment for raw and cooked foods was emphasised.

It was expected that candidates would note that food, especially meat and eggs, must be cooked thoroughly to destroy micro-organisms. Better answers included precise information on the temperature and time required to ensure that bacteria are destroyed during cooking. Salmonella was known to be associated with eggs and poultry. It was often noted that food must be served immediately because bacteria will multiply quickly when food is reheated or when it is allowed to stand in a warm place.

Candidates were required to address the preparation and cooking of food in order to achieve high marks.

There were many interesting answers but a question worth 15 marks requires much information in the form of precise facts, detailed explanations and appropriate examples.

Question 10

This question was less popular and those who chose it gave important facts but, as in the previous years, many answers lacked depth. It was expected that candidates would discuss conduction, convection and radiation in detail. Accounts were usually given of how heat is transferred by each method, followed by a list of advantages and disadvantages. Examples to illustrate the points made were sometimes given. It was disappointing to note, however, that the majority of candidates who chose to answer this question gave brief answers with little detail. Few answers gave accurate accounts of the production of heat in a microwave oven although some of the advantages and disadvantages were usually given.

It was disappointing that some candidates gave detailed information on different methods of cooking instead of methods of heat transfer. This, sadly, emphasises the need to read questions carefully before beginning to write anything down.

Careful planning of answers will be rewarded by success. As in previous years, those candidates who could demonstrate a clear understanding of the subject and were able to support their statements with explanations and examples usually achieved high scores.

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Paper 0648/02

Practical

General comments

Many candidates produced work of a reasonable standard. Most Centres arranged their work in the correct order, labelled work clearly and sent the top copies to CIE as requested, with the accompanying mark sheets. A few Centres incorrectly sent both copies of the work to CIE. It is important that the top copies are marked by the Examiner before the practical examination, are used by the Examiner during the practical work and are then forwarded to CIE with the marks and detailed annotation. The second copy (pink) should be used by the candidates during the examination but should then be collected in and retained at the Centre until after publication of the results, as this is the only copy of the work in case the original copies go missing.

Tests should be "allocated to candidates in strict alphabetical order" but some Centres were still not following this regulation. All work should show evidence of marking but this was not always the case. It is not sufficient to allocate marks without supporting reasons. This is particularly important in the Methods and Results sections where the actual work is not seen by the Examiner at CIE. A clearly labelled photograph of the results is not compulsory but may help to verify the marks awarded.

The mark scheme should be read carefully before beginning to mark the work. A few Centres were not following the mark scheme correctly, often awarding marks which were too high in the Choice and Results sections. It was sometimes necessary to adjust the marks where the dishes chosen did not answer the question set or when the marks awarded were too high for too few dishes showing too few skills.

In the Choice section quite a number of Examiners incorrectly awarded full marks to candidates who did not answer the questions correctly, who had dishes missing from their meals or who chose dishes with very few skills. It is important that candidates read the questions carefully and include a good variety of skills and any special points required by the question, e.g. "a good supply of iron", "served with a sauce", "the use of different cereals", etc. Dishes for sections (a) and (b) of the test should be labelled correctly and dishes which form part of a meal should be listed clearly in the order of serving the meal. There should not be repetition of methods or ingredients. Recipes should be written next to the chosen dishes. Some candidates presented incomplete recipes, while others listed vague foods, e.g. "mixed vegetables", "pizza cheese", etc. or gave vague amounts, e.g. "a few", "a handful". Recipes need to be accurate and foods need to be described correctly, e.g. a type of cheese, a named type or cut of meat or fish, etc. as this may be crucial to the success of the dish.

Many candidates produced very good time plans showing clearly which dishes were being prepared, giving brief methods with times and temperatures for cooking and any special points such as consistencies. A list of vague statements such as "make the pie", "cook the fish", etc. is not sufficient for a method. A number of candidates did not make preparations before cooking, e.g. pre-heating ovens or preparing cake tins. Some stated that they cooked vegetables when no previous preparation such as peeling or chopping had been done. No dishes should be prepared before the test either at home or at School as the candidate is expected to prepare, cook and serve all the planned dishes in the examination time. A few candidates ordered partially prepared foods such as *grated* cheese, *chopped* vegetables, etc. and one even served a "cake made at home", this is not allowed.

The sequence of cooking dishes was much improved from previous examinations. Candidates still need to take care that dishes for one course of a meal are all ready at the same time and that meals are served in the correct order. Few serving details were included other than "serve...". Candidates should briefly state how they would garnish/decorate their dishes or state any particular way that the dish would be served. The second course of a meal should be served approximately 15 minutes after the first course. Washing up should be shown three times in the plan and should be completed within the test time. Many candidates produced excellent shopping lists but a few presented incomplete lists, did not describe the foods they required or did not list the foods in exact amounts.

The Methods and Results sections are marked by the Examiner at the Centre and should be accompanied by a detailed annotation. Some Centres explained exactly what happened while the candidates were preparing and serving the dishes, other Centres said very little. The mark scheme states clearly that in the Methods section "where a candidate is preparing very simple dishes the maximum mark of 55 should be reduced accordingly" and in the Results section "the maximum marks must be reduced for simple dishes involving little skill". A number of Centres awarded high marks to all candidates regardless of the dishes being prepared. It should not be the case that candidates who prepare a few simple dishes should be awarded the same marks as candidates who prepare a series of complicated, skilful dishes. Some marks had to be adjusted where it was clear that the regulations had not been followed.

Comments on specific questions

Question 1

This was a popular question. Some candidates chose a good selection of dishes containing red meat, offal, pulses or green vegetables which would contain a good supply of iron. Quite a number of candidates failed to include iron in some of their dishes so should have had marks deducted. Meals for the teenagers were usually reasonable although on occasions they were not very filling.

Question 2

Midday meals were prepared well and most candidates included a sauce as required by the question. A good variety of small cakes and biscuits were prepared.

Question 3

Candidates prepared a selection of dishes using the equipment listed but did not always indicate which piece of equipment was to be used for each dish. On a few occasions candidates did not use every piece of equipment listed. Care should be taken that dishes chosen show a reasonable level of skill, e.g. lemonade is very simple to make, so it was not the best choice to show the use of a lemon squeezer and should not have been awarded full marks.

Question 4

Dishes containing cereals were prepared but candidates did not always choose *different* cereals for their dishes, many chose the same cereal in different forms, e.g. wheat flour, pasta (from wheat flour), etc. Packed meals contained a reasonable selection of sweet and savoury foods.

Question 5

Many candidates were able to cook reasonable meals although sometimes there was insufficient protein in the meal for a vegetarian. In section (b) a number of candidates prepared cakes but did not use the whisking method as required in the question. Pastry dishes were good.

Question 6

This was a popular question. A selection of sweet and savoury dishes was prepared, usually showing a variety of skills. Cold drinks were made but sometimes these were very similar, e.g. lemonade and orange juice. Two very different flavours and methods of making would have been better choices.

Question 7

Correct cooking methods were used as required by the question but candidates need to take care that dishes show skill, e.g. steamed fish, served alone, shows few skills but to add skills it could have been used as part of a fish pie. It was not always clear in this test which of the dishes would be served as part of the meal in (b).

Question 8

A good variety of named herbs and spices were used in a good variety of dishes. A few candidates use "mixed herbs" when it would have been preferable to use a particular named herb. In (b) candidates failed to make a cake by the correct method. In the creaming method fat and sugar are creamed together *before* the gradual addition of eggs and then flour. The all-in-one method was not the correct method required. Scones were made well.