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FOOD AND NUTRITION

Paper 0648/01

Paper 1

General comments

There was a wide range of scores for this paper. It was pleasing to note that there were several candidates who produced answers of a very high standard, demonstrating a thorough understanding of the subject matter and an ability to apply their knowledge. The weakest candidates showed that they were able to recall basic facts but were usually unable to give explanations or examples.

Candidates seemed to have had sufficient time to answer the required number of questions; there were no rubric errors. Occasionally there was little attempt to answer the part **(c)** question.

Scripts were usually well presented and handwriting was easy to read. The mark allocations at the end of each question or part question are for guidance. They should help a candidate to decide how much detail is required in an answer.

Comments on specific questions

Question 1

(a) Carbon, hydrogen and oxygen were known to be the elements from which carbohydrates are formed.

(b) Most candidates were able to state that fat and protein also provide energy.

(c)(i) It was expected that candidates would be able to give two facts about monosaccharides. Some stated that they are sometimes known as simple sugars and are the simplest form of carbohydrate; others noted that monosaccharides are the basic units from which all other carbohydrates are built. Credit was given to those who stated the formula for glucose or who stated that monosaccharides are soluble. Glucose, fructose and galactose were given as examples.

(ii) Full marks were scored by those who stated that disaccharides are often referred to as double sugars because they are formed from two molecules of simple sugar, or two monosaccharides. A few candidates gave the formula for disaccharides. Lactose, maltose and sucrose were known to be examples.

(d)(i) Non-Starch Polysaccharide was usually known to be another term for dietary fibre or roughage. Many candidates noted that it is indigestible so is an unavailable carbohydrate. One or two answers correctly noted that this is because the molecule has a complex structure which digestive enzymes cannot break down.

(ii) Its use in the body was well known. It absorbs water, increases bulk and softens faeces making elimination easier. Peristalsis is stimulated so conditions such as constipation and diverticulitis are prevented.

(iii) It was expected that specific foods would be given as examples of good sources of NSP. Green vegetables, apple skin, wholegrain cereals, wholemeal bread, brown rice, pulses and nuts were often noted.

(e) The digestion and absorption of starch was not well known. Candidates tended to give all the information they knew instead of selecting that which was appropriate to starch. Most candidates were able to state that salivary amylase acts on starch, converting it to maltose. Not many qualified their answer by stating that it works only on cooked starch. Unfortunately, many answers included no correct facts about digestion and absorption in the small intestine. It was expected that candidates would be able to state that on the duodenum, pancreatic amylase converts starch to maltose and that in the ileum maltase, from intestinal juice, changes maltose to glucose. This is absorbed by blood capillaries in the villi. Many candidates gave information on the digestion of sucrose and lactose; this could not be credited because the question referred to the digestion and absorption of starch.

Question 2

(a) There were many good accounts of the use of iron in the body. Full marks were scored by those who stated that iron produces haemoglobin, the red pigment in blood, which combines with oxygen to form oxyhaemoglobin. In this way oxygen is carried in the blood stream to cells where it oxidises glucose to produce energy.

(b) It was generally known that a deficiency of iron can cause anaemia which is characterised by tiredness and a pale colour.

(c) Sources of iron were well known. Liver, kidney, red meat, cocoa, egg yolk and green vegetables were the most frequently given examples.

(d) Vitamin C was known to be important for the absorption of iron.

Question 3

(a) The majority of candidates were able to give several reasons for reducing the intake of sugar. It was known that sugar can cause tooth decay, diabetes, hypertension, obesity and coronary heart disease. It was seldom noted that breathlessness, lethargy and low self-esteem can also be associated with a diet which has a high sugar content.

(b) It was disappointing to note that candidates were not always able to suggest ways to reduce sugar in the diet. It was expected that examples would have included the use of artificial sweeteners in tea and coffee, eating fewer sweets, cakes and biscuits, and drinking low calorie soft drinks. No-one suggested checking food labels to find out the amount of sugar contained in a product.

Question 4

The question focused on good eating habits and not on the provision of balanced meals for children. Many candidates suggested that from an early age children should eat with the rest of the family so that they could follow the example set by adults and that they should not be allowed to leave the table until the end of the meal. The importance of having breakfast was noted as was the need to have meals at regular times. It was sometimes suggested that food should be cut into small pieces to make it easier to eat and to encourage independence. Small portions should be served and the child encouraged to eat everything. Food should be varied and served attractively and water, rather than fruit juice, given with the meal. Most candidates noted that fruit and vegetables should be served to children and that eating between meals should be avoided. All valid points were credited.

Question 5

(a) Candidates were usually able to give some of the reasons for serving sauces with meals but limited their score for this part of the question because examples were not given to illustrate the reasons given. Sauces were known to add flavour, colour, moisture and interest to dishes. Some candidates correctly noted that some sauces bind together ingredients and that others counteract the richness of certain foods. The nutritional value of a dish is usually improved. It was expected that candidates would be able to state, for example, that serving apple sauce with pork counteracts the richness of the pork and that cheese sauce served with cauliflower adds flavour.

(b)(i) The method of making a roux sauce was not well known. Most candidates were able to gain marks for stating that margarine is melted before flour is mixed in and that milk must be added gradually while the mixture is stirred. It was, however, rarely noted that the roux must be cooked before the milk is added and that the pan must be removed from the heat before the addition of milk. Few candidates mentioned that the sauce must then be boiled in order to thicken it. An allocation of five marks for this part of the question suggests that a detailed answer is required.

(ii) Many ingredients were suggested to change the flavour of the sauce. They included cheese, onions, mushrooms, mustard, parsley, sugar, cocoa and brandy.

(c)(i) Most candidates correctly stated that a wooden spoon does not conduct heat so it will not burn the hand during the preparation of the sauce. Others noted that a metal spoon could scratch the pan or that the broader edge of a wooden spoon makes it more efficient.

(ii) Full marks were usually gained in this part of the question; candidates were aware that to avoid lumps in the sauce the liquid must be added gradually, off the heat, and that the mixture must be stirred continually at each stage of its preparation.

(d) It was a little disappointing to note that many candidates were not able to describe the effect of moist heat on starch. Full marks were achieved by those who stated that during the cooking of the sauce the margarine melts and is absorbed by the starch grains. The starch then absorbs the milk. When heated, the starch grains soften and swell; some of them burst thickening the sauce. The process is known as gelatinisation.

Question 6

(a)(i) There were many good accounts of how accidents can be avoided when storing and using knives. It was suggested that knives be kept out of the reach of children in a knife block or with the blade covered by a sheath and that they should not be put into water with other items when washing up in case someone is cut when reaching into the water. There was advice to use the appropriate knife for the task, to use a chopping board and to ensure that knives are kept sharp. Credit was also given for stating that full attention should be given to any processes involving knives.

(ii) Candidates were able to give sound advice on avoiding accidents when deep frying but no credit was given for general information on the method. It was advised that the pan must not be over-filled with oil or overheated and that the pan handle should be turned towards the stove. It was usually stated that food should be dried well or that there should be no water near hot oil. It was noted that food should not be thrown into the pan; it should be gently slid from the side. Again, all valid points were credited.

(iii) It was usually noted that plugs should be wired correctly and that there should be no bare wires. Some candidates stated that sockets should not be overloaded and that the appliance should be switched off and the plug removed from the socket before the appliance is dismantled or washed. Most answers included the advice that electrical equipment must not be touched with wet hands and that flexes should not be hanging over the edge of benches in case someone tripped. Better answers advised that the manufacturer's instructions should always be followed. No credit was given for points about the storage of electrical equipment since the question specifically related to the use of electrical equipment.

(b)(i) The information given on work surfaces was often a little disappointing. Credit could not be given to general statements about the importance of surfaces or keeping them clean. More precise information was required. Many candidates noted that surfaces should be smooth or should not have cracks because bacteria can accumulate and be transferred to foods and cloths. They should be cleaned before and after every task with hot (not warm), soapy water and should not be allowed to become cluttered with food or equipment. The use of disinfectants or anti-bacterial sprays was advised. Materials, for example marble and Formica, were suggested and the advice to protect the surface with a chopping board was frequently given. Some candidates correctly stated that there should be a work surface on either side of the stove and the sink to reduce movement and that the height of the work surfaces should be comfortable in order to reduce bending or stretching.

(ii) There were many excellent accounts on ventilation. It was well known that steam, smells, smoke and grease must be removed from a kitchen in order to make it a more comfortable place in which to work and to avoid damage to decorations. Heat must be allowed to move out and fresh air move in. This can be achieved by windows, cooker hoods, extractor fans and air conditioning units.

Question 7

(a) Candidates who chose to answer this question were usually able to list many of the nutrients in fish. Most of them mentioned protein but few qualified this by stating that it was HBV protein. Fat and the fat-soluble vitamins A and D were noted, as were iodine, fluorine, sodium and calcium.

(b) There were many accurate lists of points to note when buying fresh fish. No credit was given to information regarding the purchase of frozen fish. It was known that the eyes of the fish should be bright and bulging and that there should be plenty of scales, firmly attached. The tail should be stiff, the skin moist and the gills must be bright red. There should be no unpleasant smell. Many candidates were able to gain full marks for this part of the question.

(c)(i) The method of cleaning a whole fish was not often well described. The need for thorough washing was usually noted but often there was no other correct information. It was expected that the description would include the removal of scales, head and gills and the slitting of the belly to remove the internal organs. The tail and fins are often trimmed, not necessarily removed.

(ii) It was hoped that a simple description of the preparation of fish for freezing would have been given by more than a very small number of candidates. Full marks were awarded to those who stated that the fish should be separated into portions or meal sizes, then put into a plastic bag or plastic box. As much air as possible should be removed and the bag or box sealed. It can then be labelled to show the name of the fish, the quantity and the date.

(d)(i) The confusion between freezing and refrigerating continues. Many candidates are not sure of the difference and use the terms interchangeably. Fish can be kept in a freezer because at a temperature of -18°C or below bacteria are dormant. The water in the fish is frozen so it is unavailable for bacterial growth.

(ii) There are several methods of preserving fish other than freezing. Refrigerating and cooking are not acceptable answers.

Canning can be used because the heat used during the process destroys bacteria. The can is sealed and prevents the entry of further bacteria. In drying, water is removed leaving food which is too concentrated for bacteria to use therefore they are unable to multiply. When fish is salted, water is removed from both the fish and the bacteria by osmosis. Again, the food is too concentrated for bacteria to use.

Fish can be pickled. First the water is removed by osmosis when salt is put over the fish. The water is replaced by vinegar (acid) and bacteria are unable to multiply in acidic conditions.

Smoking can be used to preserve fish. First the fish is salted and the water removed by osmosis. It is then hung over smoking wood which deposits a layer of phenol on the surface of the fish, inhibiting bacterial growth.

Marks were awarded for naming two methods of preservation other than freezing and for giving additional facts about each of the methods named.

Question 8

(a) The opening statement of this question is that meals should be well-balanced. Other points to consider apart from those relating to nutrition were wide-ranging and could include the cost of ingredients and the time, resources and food available to the cook. Some candidates noted that the weather could influence food choice as could the occasion or the time of day. Every meal should be varied in colour, flavour and texture and should be within the capability of the cook. Credit was given for noting that healthy eating guidelines should be observed and that methods of cooking should be chosen which retain as many nutrients as possible. Other points to consider when cooking could relate to food hygiene and the need to allow sufficient time to cook foods thoroughly to ensure that they are safe to eat. Candidates were expected to illustrate their answer with examples and to explain the importance of each of the factors mentioned.

Some candidates had extensive knowledge on how vegans can be supplied with High Biological Value (HBV) protein. Most answers mentioned that soya beans are the only plant source of HBV protein and that soya can be used for a variety of products such as milk, flour, tofu and tempeh. Textured Vegetable Protein (TVP) is made from soya beans which have had their oil removed. The remaining part is spun to make fibres which are then formed to resemble the texture of meat. TVP can be shaped into sausages, burgers, chunks or mince. Commercial products such as Quorn, although meat-free, are not suitable for vegans because the fibres are bound with egg, an animal product.

Low biological value proteins are usually obtained from plant sources such as cereals and pulses. Many candidates gave very sound explanations of how, by mixing different LBV protein foods the quality of the protein can be improved. The concept of complementing proteins in order to compensate for missing indispensable amino-acids was understood well and good examples of combining protein foods were included in many answers. The most popular examples were baked beans on toast and lentil soup and bread. HBV and LBV foods can also be mixed in the same meal but this fact was rarely mentioned. An example such as spaghetti bolognese made with TVP mince could have been given.

On the whole, answers were too brief and lacking in detail. Fifteen marks were available but some candidates wrote only a few lines.

(b) This question was attempted by fewer candidates than the previous question. Those who did attempt it had limited knowledge of the aims and methods of preservation. Some of the aims of preservation are to provide food when supplies are limited, to enjoy food out of season and to create new products which add variety to the diet. Other aims are to cope with a glut of food by storing it when costs are low and the quality is high for a time when it is scarce and expensive. Some foods are preserved commercially and sold as convenience foods which save time and energy and can be used in emergencies.

Most candidates simply stated that preserving food prevents decay and therefore waste. The aim is to retain as many of the qualities of fresh food as possible and to prevent the entry of micro-organisms by sealing the food well and by creating conditions which do not favour their growth. It was expected that answers would include several of these aims.

Micro-organisms require warmth, moisture and food in order to thrive. They do not multiply in high concentrations of salt and sugar or in acidic conditions. Good answers named methods of preservation and indicated how the growth of micro-organisms would be prevented in each case. Methods of preservation mentioned included bottling, canning, salting, pickling, jam making, drying, freezing, smoking and heating to a high temperature (UHT). Refrigerating, although frequently mentioned as a method of preserving food, does not prevent the multiplication of micro-organisms; it only slows down the process.

Paper 0648/02

Practical

General comments

Candidates generally produced work of a reasonable length and included work in all sections of the paper. The paperwork was usually arranged in the correct order but some candidates did not label their work clearly with the number of their allocated test. This made it difficult to assess the work when it was not clear which question was being answered. Work should be fastened together securely with the examiner mark sheet attached to the front of the work of each individual candidate. It is not helpful if the mark sheets are separated from the candidates' work. Some Centres included photographs with their work and this was particularly helpful in confirming the marks awarded in the results section. It was disappointing that in some cases the instructions for marking were not followed carefully resulting in marks being awarded which were too high.

The preparation section has marks allocated for choice and planning. In choice of dishes candidates should show clearly the names of their chosen dishes with recipes alongside. The dishes should be arranged in the order required by the particular test and they should be named clearly. It should be clear what is being made and the recipes should be complete and detailed, with descriptions of the materials required. A variety of ingredients should be used throughout the dishes rather that the repetitive use of a few foods e.g. pasta, cheese, peppers. Care should be taken that sufficient work is planned to fill the time and that the dishes answer the question fully. Many candidates were asked to produce complete meals for the second part of their test but most failed to do this. Accompaniments such as vegetables and sauces were omitted and many candidates failed to provide a second course. This made choices incomplete and should have limited the marks which could be allowed for this section. Dishes were listed randomly. It was often not clear which dishes were chosen to be part of the meal. Clear headings would have been helpful here. A good variety of skills and processes should be shown. A series of salad dishes and simple drinks do not show many skills so should not be awarded full marks for choice. Where candidates are required to plan meals the mark scheme does state 'balanced meals'. This was not usually evident in the choices which were made, yet no consideration was given to this in the marking of this section. Candidates should show economy in fuel and food. Often it was not clear that candidates were considering this aspect and certainly in choice of ingredients a number of candidates chose expensive ingredients repeatedly. In marking this section Examiners need to consider carefully all the points on the mark scheme and show clearly where the requirements of the tests are being met in the candidates' work. Much more detailed annotation is required.

In the planning section candidates should work through their test in a sensible sequence, briefly indicating methods, temperatures and cooking times for each dish. Dishes which need several stages or long cooking or setting/chilling should be prepared early. The work to be done at each stage should be seen clearly including washing of dishes, serving the dishes and a final clearing up. Candidates should not waste time simply waiting for dishes to be cooked. The work should be sequenced in such a way that something else is prepared during the waiting time. The mark scheme does expect that candidates serve their meals in the correct order of courses. This was not usually the case. Most candidates simply completed their dishes and served them, sometimes throughout the test and sometimes at the end. This meant that meals were not served in the correct order of courses and dishes which should have been served hot were not actually hot. Shopping lists should be detailed and complete. Some candidates had incomplete shopping lists while others did not total their ingredients. Special equipment was often omitted when it was clear that some would be required.

Examiners need to take careful note of the marking of method of working. The mark scheme states that candidates should not gain high marks where methods are poor, few different skills are shown and timing is poor. It is obvious that candidates who choose a small amount of simple work can complete the work efficiently and quickly whereas candidates who choose more complicated dishes will need to be more organised and methodical to complete all the work. Many Centres gave very high marks to poor candidates when the work was very simple. Clear justification should be given in each section for the marks awarded. Vague statements such as 'very good', 'satisfactory work' and 'adequate' do not explain how the candidate performed in the examination. Suggested method marks are given in the instructions for marking the work of good, average and poor candidates.

In the quality of dishes section the dishes made should be listed and the total mark allocation divided between these dishes. The mark scheme states that maximum marks must be reduced for simple dishes involving little skill. Dishes with low skills such as salads should not be awarded the same mark as more complicated dishes such as pastries. Many Examiners awarded the same high marks to all dishes which showed no differentiation in levels of skill. Comments about the dishes should be detailed. 'Satisfactory taste', 'pleasant' and 'well baked' are too vague. Clear and detailed statements should be made regarding flavour, texture and edibility of each dish.

In marking the presentation of the work comments should be made regarding the sequence of serving, the correct temperature of the food and appearance of the dishes when they are served. Many Centres wrote about the colour of serving dishes and table cloths but gave no information regarding the correct serving of individual dishes or meals.

Comments on specific questions

Question 1

This was a popular question but was not usually well answered. The three dishes suitable for a lacto vegetarian could have been sweet or savoury and ideally should have included some dishes which would provide protein for this group. However, many candidates chose to prepare simple dishes containing vegetables only e.g. salads, stuffed tomatoes, etc. The choice of dish for the meal was not indicated and many candidates made only a simple drink in addition to the three vegetarian dishes.

Question 2

This again was a popular question with candidates easily able to prepare three shortcrust pastry dishes. However, although making the pastry showed skill many candidates did not choose to show further skills in their work. Some prepared the pastry repetitively when it could have been made as one batch and divided up for use. Some then used the pastry for very similar dishes e.g. two flans or two pies. A packed meal should have been prepared using one of the pastry dishes. It was not usually clear which dish was to form part of the meal and often candidates added no further dishes to the packed meal except for a drink. This should have been a complete and suitable balanced packed meal for the office worker ideally including a variety of savoury and sweet foods and a drink.

Question 3

This was the most popular question. Candidates sometimes chose dishes which showed skill but on many occasions skills were limited e.g. salads, stir fries. The same vegetables were often used repetitively throughout the dishes. Some dishes were produced which incorporated very small amounts of vegetables and some candidates used frozen vegetables which needed no preparation. Again the choice of dish for the evening meal was unclear and accompaniments were not made. Fruit drinks were usually made, but on many occasions candidates bought cans and bottles of manufactured drinks and mixed these together, sometimes adding a little fruit. This showed very little skill.

Question 4

No Centres chose this question. Soya products could have included soya bean sprouts, bean curd, soya milk, textured soy protein, fermented soya beans etc. These could have been incorporated into three skilful dishes. The main meal should have used one of these soya dishes with accompaniments to provide a well balanced, attractive and easy to digest meal suitable for the elderly.

Question 5

This was a less popular question. Candidates made dishes containing different convenience foods but usually chose simple dishes so limiting the marks which could be awarded for a variety of skills. In the second part of the question rough puff pastry was usually the choice. This was usually well made and used in two different dishes.

Question 6

Candidates were able to show different methods of cooking fish and most candidates chose three different types of fish for their recipes. Methods were reasonably skilful. However, again it was not clear which dish would be used for the meal and accompaniments were missing. A choice of dessert was prepared but on many occasions these were not very skilful, simply mixing fruit with yogurt or using packet and tinned ingredients to make a cheesecake.

Question 7

Very few Centres chose this question. The teenagers should have been served a balanced, attractive, two course meal sufficient for their energy needs. Dishes providing energy were produced but these did not form a balanced meal and accompaniments were not made. Good cakes were prepared and biscuits were made but sometimes these were not made by the melting method as required by the question.

Question 8

A few candidates answered this question but did not seem to be clear in their understanding of pouring and coating sauces. Sometimes these were muddled with coating batters. The main meal once more was unclear. Candidates did not indicate which sauce dish was to form part of the meal and did not add sufficient accompaniments to make a complete meal. Biscuits were usually made and on the whole these showed reasonable skills.