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# FOOD AND NUTRITION

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<p><b>Paper 0648/01</b></p>
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<p><b>Paper 1</b></p>
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## General comments

There was a wide range of scores for this paper. It was encouraging to note that many candidates produced work of a very high standard, demonstrating their ability to state and explain facts and showing their understanding of the subject by applying their knowledge to a range of situations. The weakest candidates were able to recall some basic facts but were unable to offer explanations or examples in support.

Candidates seemed to have had sufficient time to answer the required number of questions; there were few rubric errors although some candidates answered both of the questions in **Section C**.

Scripts were well presented and handwriting was easy to read. The mark allocations at the end of each part of a question are for guidance. They should help a candidate to decide how much time to spend on their answer and to estimate the amount of detail to include in their answer.

## Comments on specific questions

### Question 1

- (a) The functions of protein were well known. Most candidates stated that these were growth, repair, maintenance and energy. Few noted that protein can be used for the manufacture of enzymes, hormones and antibodies.
- (b)(i) Most candidates were able to name four different animal sources of protein. It was not expected that four types of meat would be given. Gelatine was rarely mentioned.
- (ii) It was well known that cereals, nuts and pulses provide protein. Named examples were credited.
- (c) It was expected that candidates would be able to state that High Biological Value protein contains all the indispensable amino acids and that Low Biological value protein lacks at least one of the indispensable amino acids.
- (d) There was often confusion about the nature of complementary proteins. They are a mixture of two LBV protein foods or a HBV protein food and a LBV protein food. If they are consumed in the same meal the indispensable amino acid missing in one of the foods can be supplied by the other, improving the supply of HBV protein. Examples were usually correct.
- (e) There were many very good accounts of the effects on the body of a deficiency of protein. The symptoms of marasmus and kwashiorkor were described well.
- (f) Most candidates could give some correct information on the effects of excess protein in the diet. Since protein cannot be stored it is deaminated in the liver. The nitrogenous part is removed and is excreted as urea. The remainder is used for energy or stored as fat.
- (g) The digestion of protein was well described by many candidates who were able to name enzymes and state the part of the digestive system in which they worked. The breakdown products were known and the sequence of events was usually correct. It was disappointing that some candidates were unable to give any correct information. Amino acids were known to be absorbed by villi in the ileum before being carried by the blood to the liver.

### Question 2

- (a) Sources of vitamin C were well known. It was expected that candidates would give different sources but many named four citrus fruit.
- (b) Candidates were usually able to give some of the functions of vitamin C but seldom scored full marks. Vitamin C is important for the formation of connective tissue, for growth and for building bones and teeth. It is associated with the absorption of iron and the production of blood and it assists in the maintenance of skin. Many candidates noted that vitamin C helps the body to fight disease. This is incorrect; vitamin C helps the body to resist infection.
- (c) The majority of candidates correctly stated that a deficiency of vitamin C leads to scurvy.
- (d) Symptoms of scurvy are bleeding gums, loose teeth and the slow healing of wounds and fractures. Muscle and joint pain is experienced and there is a loss of weight. Some of the symptoms were known.

### Question 3

This question required an account of the choice and cooking of foods for a very active person. Responses were disappointing; they were usually related to how a balanced diet could be provided. Candidates usually noted that carbohydrate foods would be required to provide energy. Examples such as pasta, potatoes and cereals were given.

Better answers mentioned that water and salt would be needed to replace losses in perspiration and that sources of vitamin B would be required to release energy from carbohydrate, fat and protein. It could have been noted that breakfast is important so that metabolism can begin and energy released. The range of points which could have been explained was wide but it must be emphasised that each point had to be related to the choice and cooking of foods for a very active person. Answers of this type rely on the candidate's understanding of the subject since it is only by understanding that appropriate information can be selected and applied.

### Question 4

- (a) Few candidates were able to score full marks for this part of the question. No credit was given if only the words 'minerals' and 'vitamins' were included; iron and vitamins A, D, riboflavin, niacin and B<sub>12</sub> should have been identified.
- (b) There are many different ways in which eggs are used in the preparation of meals. Credit was given for each different use mentioned and further marks were scored for illustrating each use with an example. Many candidates gained full marks for this question. Sometimes dishes which include eggs were listed but the function of egg in the dish was not identified.  
  
There was often confusion over the use of the terms glazing and coating. Foods, for example fish and Scotch eggs, are coated before frying; pastry and scones are glazed before baking to give a brown, shiny surface after cooking.
- (c) Good accounts were given on the storage of eggs. Full marks were scored by those who were able to state that eggs should be stored in a cool place with the round end pointing upwards. They should be kept away from foods with strong odours because the odour will be absorbed by the egg. If frozen, the yolk and the white must be stored separately.
- (d) It was expected that candidates would state that eggs coagulate on heating; the transparent white becomes opaque and both white and yolk thicken and solidify. Temperatures at which each part coagulates could have been given. Many accounts noted that greenish black ring of iron sulphide which forms around the yolk of a hard boiled egg and that overcooked eggs become indigestible. Most answers lacked detail.

**Question 5**

(a) There were several excellent accounts of the method of making flaky pastry; full marks were scored by those candidates who were able to give reasons for each stage of preparation. It was surprising that sometimes this question was chosen by candidates who had never, apparently, made flaky pastry. It is impossible to gain marks by guessing a possible order of work. It was expected that candidates would note the shape to which the pastry must be rolled before the addition of fat, the particular method of placing the fat on the pastry, followed by folding, rolling and sealing. Shortcrust pastry was occasionally confused with flaky pastry. Credit was given to every correct point which could be related to flaky pastry even though a different pastry was being described. It is always correct to state that flour must be sieved to introduce air and that when rubbing fat into flour only the fingertips should be used since they are the coolest part of the hand. Information on baking pastry dishes was not expected since the question was only concerned with the making of the pastry.

(b) It was expected that strong, plain flour would be recommended for making flaky pastry since it has a high gluten content. This is important because an elastic dough is required.

Some candidates correctly stated that self-raising flour should not be used because it contains a chemical raising agent; flaky pastry relies on air being trapped between the layers to make it rise. Wholemeal flour, although more nutritious, creates a heavier dough.

Butter was named as a suitable fat because of its colour and flavour; it does not melt easily.

Hard or block margarine was accepted but soft margarine was not since it would not keep the layers apart and would melt too easily. Lard was known to give shortness but lacks colour and flavour. A mixture of lard and hard margarine was a popular suggestion.

(c) Credit was only given to named dishes; chicken pie, for example, was accepted but the word 'pie' was not. Other named dishes included cream horns, sausage rolls, Eccles cakes and apple turnovers.

(d) It was disappointing that few candidates were able to give more than one or two rules to follow when rolling any type of pastry. Credit was given for noting that pastry should be rolled lightly and in one direction only. It should not be turned over, nor should it be stretched. It should be rolled to an even thickness but must not be rolled too many times. The rolling pin and table must only be lightly dredged with flour.

**Question 6**

(a) There were many very good accounts on saturated fats. They were known to be from animal sources, for example butter, suet and lard, and are found in cheese, cream and red meat. They are solid at room temperature because they contain as much hydrogen as they can hold; the fat molecule has only single bonds. It was usually noted that saturated fats can be harmful to the body since they may contain cholesterol which is deposited in the arteries, narrowing them. This can lead to hypertension, strokes and coronary heart disease.

(b) Candidates were usually able to write at length on Non-Starch Polysaccharide and full marks were often scored. NSP was known to be indigestible cellulose found in the cell walls of plants. Good examples of sources of NSP were given. Its function was known to be the absorption of water in the colon, making faeces soft and bulky so that elimination is easier. The results of a deficiency were usually given as constipation, diverticular disease and cancer of the colon although other consequences were equally acceptable.

(c) There were many excellent accounts of the importance of water in the diet. It was noted that water is an important constituent of body fluids such as blood, digestive juices and saliva and that it is needed to keep the body cool. It is used in all metabolic reactions and is a solvent for nutrients. Toxins are eliminated in urine. It was usually mentioned that a deficiency of water results in dehydration which can cause headaches and fatigue. Additional water is required when the level of physical activity is high, when the weather is very hot or when a person is suffering from a fever. It was correctly noted that two or three litres of water are needed each day to maintain water balance in the body and that good sources are fruit and vegetables, milk, soups and beverages.

**Question 7**

- (a) Many candidates chose to answer this question on food spoilage and preservation.

It is essential that essays are planned in order that all aspects of the topic are considered.

Most responses were too brief so inadequate detail was included. Candidates should be advised to spend a few minutes identifying the information required from the question before starting to write; sometimes information was muddled, suggesting a lack of understanding of the topic. Credit was given for all relevant information given but high scores were only gained by those candidates who gave detailed responses, illustrated often by named examples.

Few candidates were able to state that the causes of food spoilage are the actions of yeasts, moulds, bacteria and enzymes. There are several possible conditions necessary for food spoilage and credit was given to those candidates who were able to state some of them. Yeasts, moulds, bacteria and enzymes require warmth, moisture, a source of food, a suitable pH and sometimes oxygen. They also need time in order to bring about changes in food.

Some candidates discussed the storage of dry goods and gave reasons for the methods of storage mentioned. Most answers included information on the storage of food in the refrigerator. However, there continues to be confusion between refrigerating and freezing. A refrigerator is used for short-term fresh food storage; it operates at a temperature of approximately 4°C. A freezer, on the other hand, stores food at -18°C. Bacteria are dormant at this temperature so food can be kept for a long time. It was expected that discussions on refrigeration for the storage of fresh foods would include the advice to cover foods to prevent the absorption of odours from other foods and to stop the food from drying, to use clean containers to avoid contamination by bacteria and to avoid putting too much food in the refrigerator since it reduces the circulation of cold air. A few candidates noted that hot food must not be put into the refrigerator since the temperature of the cabinet would rise, making conditions more suitable for micro-organisms to flourish. Some answers correctly included the advice to use foods in rotation since the temperature of the refrigerator is only low enough to slow down the growth of micro-organisms; food still decays. All correct information concerning refrigeration was credited, although there were few explanations given.

The question gave candidates the opportunity to discuss any methods of preserving food.

The most successful candidates noted the principles of each of the methods mentioned and gave examples to illustrate their answer. Freezing, jam-making, bottling and drying were often considered; pickling, pasteurisation, Ultra Heat Treatment, salting and smoking were mentioned less often. The use of additives was noted in a few answers but irradiation was seldom considered.

or

- (b) This question was a popular choice and those who attempted the question were often very successful. Again, candidates should be advised to plan their answers carefully to avoid producing unstructured answers.

It was expected that different methods of frying would be identified and that advantages and disadvantages of frying would be considered. Examples of suitable foods for each of the methods of frying were usually given. There are many advantages of frying. It is a quick method of cooking which adds calories to food without adding bulk. It adds flavour, it browns the surface of the food and gives a crisp texture. There are, however, disadvantages. Fried food is more difficult to digest and the frying process requires constant attention because it can be a dangerous method of cooking. Many candidates considered frying an easy method but others disagreed.

Health problems associated with frying were often considered. Fats are associated with cholesterol which is deposited along artery walls. Coronary heart disease, hypertension and obesity are some of the possible consequences of eating fried food.

Good results can often be achieved by coating food before deep frying. Coatings hold the food in shape and prevent breaking. In addition, they protect food from the intense heat of fat making it is less likely to burn and prevents the absorption of fat by the food.

The temperature of the fat was usually mentioned as being important for good results.

If the temperature of the fat is too high the outside of the food will cook quickly leaving the inside not properly cooked. Better answers noted the danger of food poisoning if the inside does not reach a high enough temperature to destroy bacteria, and that the food becomes unattractive if the outside is overbrowned and has a bitter flavour when overcooked.

If, however, the temperature of the fat is not high enough the food will absorb fat, making it unattractive and difficult to digest. Few, however, were able to explain that this is because the protein in the egg has not coagulated and the starch in the flour has not gelatinised as soon as the food enters the oil. This would have formed a barrier through which fat could not penetrate.

The safety rules to follow when deep frying were well known. Correct reasons were usually given. It was noted that the pan should not be more than half full, it should not be left unattended and should not be overheated. It was well known that food should not be wet, it must be put into the pan gently and large quantities should not be fried at the same time.

Most candidates correctly stated that the pan handle should be turned in towards the stove and that if possible the back burner should be used.

Many other valuable points were considered. It was advised that absorbent paper should be used to soak up surplus fat and that strong and heavy pans are best since they stand firmly on the stove. Many candidates gave correct information on suitable fats and oils to use for frying. As in other answers, credit was given for all correct, relevant facts but the best scores were achieved by those who gave detailed answers covering many aspects of the question.

**Paper 0648/02**

**Practical**

### **General comments**

Generally the work presented by candidates was of a slightly higher standard than last year. All candidates labelled their work clearly with the allocated test number and the work was fastened together securely. Some Centres did not attach the Examiner Worksheet to the front of the work of each individual candidate. The mark sheet should be securely attached and not presented separately. Many Centres included photographs with their work and this was particularly helpful in verifying the award of marks in the results section. Some Centres awarded marks accurately according to the instructions for marking. However, some Centres did not follow the instructions carefully and awarded marks which were too high.

It is important that Examiners mark all sections of the planning sheets and the practical examination. Detailed annotation should be given for all areas of the work to explain the awarding of marks.

In the preparation section marks should be awarded for the correct choice of dishes according to the question set. Dishes should be named clearly and arranged in the order required by the test. Recipes should be given alongside each named dish and these should be detailed and complete, with accurate descriptions of the items required. Candidates should read the question carefully and take care that the dishes answer the question fully, e.g. a cake which is decorated, a choice of dessert. Sufficient work should be planned to fill the time. A variety of ingredients should be used and the use of convenience foods, e.g. frozen, canned foods should be limited. A good variety of skills and processes should be shown. Methods for the production of the dishes are not required in this section.

Many tests require that candidates make complete meals for the second part of their test. Candidates did not usually indicate clearly which dishes were chosen, from part (a) of the question, to be part of the meal. Dishes were listed randomly, where clear headings would have helped clarify the choice. Many meals were incomplete, candidates omitting vegetables, sauces and second courses. This should have limited the marks allowed for this section as the choices were incomplete. Where meals are planned the expectation is that the meals should be balanced and this is required by the mark scheme. On many occasions this was not evident, yet no consideration was given to this in the marking. Economy should be shown in the use of fuel and foods. Sometimes little consideration was given to this aspect, some candidates using ovens for one dish only when two dishes could have been cooked together and others were using two ovens for their tests. Some candidates were choosing to use expensive ingredients when cheaper alternatives could have been used. Examiners need to consider carefully all the points on the mark scheme so that marks can be awarded correctly. Detailed annotation is required to show clearly where the candidates work is meeting the requirements of the test.

In the planning section candidates should explain how they would work through their test in a logical sequence. Brief details should be given indicating methods, cooking times and temperatures for each dish. Many candidates simply put the food "to cook". Dishes which need long cooking, several stages, or need to be served chilled, should be prepared early in the plan. Candidates should not waste time waiting for foods to cook; other work could be completed during this time. All work should be clearly indicated including the preheating of ovens, preparation of equipment (e.g. steamers, baking tins, etc.), washing up and serving. Candidates should remember that washing up needs to be done several times throughout the test. Also some dishes, such as cakes, need to be cooled before being decorated. Many candidates planned to ice cakes as soon as they came out of the oven. Candidates should serve meals in the correct order of courses and hot foods should be served hot. Many candidates served their dishes whenever they were ready throughout the test so no complete meal was served properly. Shopping lists need to give accurate total lists of ingredients required for the test. Some candidates did not give the amounts required nor total their ingredients. Most candidates would require some special equipment e.g. baking tins, serving dishes, etc. so this section should not be left blank.

In marking the method of working Examiners need to study the mark scheme carefully. High marks should not be awarded to candidates who only work well and complete all their dishes because the work planned is short and simple. Candidates who choose the correct number of skilful dishes will need to be more organised to complete their work and these candidates should be able to achieve higher marks. Suggestions are given for method marks in the mark scheme for awarding marks to good, average and poor candidates. Annotation is very important in this section and it is helpful if this is relevant and detailed.

In the quality of dishes section, marks should be divided up between all parts of the test so that dishes prepared have an appropriate number of marks allocated to each one. Dishes which have not been planned or completed should not receive marks but these marks should not be allocated to other dishes. Maximum marks should be reduced for low skill dishes so that, for example, salads should not have the same mark allocation as pastries or decorated cakes. Often Examiners give very high marks to simple dishes. Annotation once more is important. Statements such as "good", "tasty" and "satisfactory" are not helpful. Detailed notes regarding texture, flavour and edibility of each dish should be given. Many Centres made no comments about the presentation of work and serving. It would be helpful to know if foods were served in the correct way, were garnished or decorated, served hot or cold as required and served in the correct order.

### **Comments on specific questions**

#### **Question 1**

This was a popular question and most candidates chose three different dishes for the different methods of cooking. However, sometimes candidates chose simple low skill dishes to illustrate the methods, e.g. steamed fish, stewed fruit or sometimes used the same food for two different methods. It was not always clear which method was to be used for each named dish, headings here would have been helpful. Many candidates did not indicate clearly which one of the dishes was to be used for the meal and usually no accompaniments were provided.

#### **Question 2**

This was the most popular question. However, candidates often planned too little food for the packed meal. A manual worker would use a lot of energy so would require at least two savoury dishes, a second/sweet course, and possibly additional fruit as well as the drink stated in the question. Most candidates made the pastry dish only, sometimes adding a salad. Some dishes chosen were unsuitable for packing as they may be difficult to carry or they may not keep fresh on storage. Cakes were made, usually by the creaming method, but often were not decorated as required by the question.

#### **Question 3**

This again was a popular question. Some candidates answered this question well using meat, cheese and fish in their dishes. Some used beans as an example of a high biological value protein food when beans would only provide low biological value protein. Generally skilful dishes were chosen. Again the use of one of these dishes in a vegetarian meal was not made clear and often accompaniments were omitted.

#### **Question 4**

In this test good sources of the nutrients were usually chosen e.g. iron in red meat, and Vitamin C in citrus fruits. However, on many occasions the planned meals were not complete or filling enough for two growing teenagers. The majority of candidates made small cakes although sometimes the rubbing in method was not used. Occasionally one large cake was made. Many different savoury snacks were made, but some candidates repeated the rubbing in method and a few candidates made no snack at all.

#### **Question 5**

This question was less popular. Three dishes containing fruit were chosen, usually different fruits, but sometimes the dishes were very simple e.g. fruity milkshake. Usually one further dish was made for the evening meal but it was not clear which dish from (a) was to accompany this. Many different varieties of biscuit were made which answered the question well.

#### **Question 6**

This was not a popular question. Candidates were not always clear about the different cereals and often chose two dishes which contained wheat in the form of flour. The choice of dish for the meal was not made clear and again little was added to make the meal balanced and complete. Quite a few candidates chose to make one dessert only, not a choice as required by the test.

#### **Question 7**

For this question a list of dishes was usually given, but it was not clear which of these dishes were to be used for the simple lunch and which were for the party. Many candidates chose simple, low skill dishes e.g. sandwiches, pizzas with ready made bases. The dishes did not always appear to be attractive as would be required for a children's party.

#### **Question 8**

Few Centres chose this question. To illustrate fish cookery the most popular choice of dish was fish pie. However, this was usually not served with added vegetables and often no second course was planned for the meal. The biscuits chosen were usually suitable, as were the scones.