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## FOREWORD

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This booklet contains reports written by Examiners on the work of candidates in certain papers. **Its contents are primarily for the information of the subject teachers concerned.**

# FOOD STUDIES

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## GCE Advanced Level

Paper 9336/01

Theory

### General comments

The overall standard of work in this year's examination was satisfactory. Some of the answers were outstanding, demonstrating a high degree of knowledge and an ability to apply that knowledge to specific situations. Many answers, however, lacked detail. Some candidates did not appear to have read questions carefully and failed to respond appropriately; their response often lacked relevance and detail. Other candidates gave too much detail to parts of a question which were worth few marks. Mark allocations should be used for guidance; they are meant to help a candidate to assess the amount of time to spend on an answer and the amount of detail to include. It is not possible to give guidance on the expected length of an answer but if candidates write in excess of eight sides on one answer it can be assumed that too much unnecessary detail has been included. Sometimes poorer answers included all the information known on a topic; this not only wastes time but suggests an inability to select appropriately.

Some candidates began each question on a new page; this is not necessary. It is, however, expected that the end of each question is indicated by a line drawn across the page. Individual answers were not always clearly numbered. It would help if time was allowed at the end of the examination for checking that each answer is numbered, that each part of a question is clearly indicated by the appropriate letter and that pages are assembled in the correct order. Attention should be drawn to the instructions on the front of the question paper. Although correction fluid and staples should not be used, many Centres allowed the use of both. Sometimes the string used to fasten pages together was tied too tightly making it difficult to turn pages without tearing the paper. There is always the risk that some of the pages will become detached and possibly lost. It would be appreciated if candidates were encouraged to tie string securely while still allowing pages to be turned easily.

### Comments on specific questions

#### Question 1

- (a) This was a very popular question and many candidates demonstrated a great depth of knowledge and understanding of the composition of carbohydrates, fats and proteins and the release of energy from them. It was expected that the chemicals making up each of the nutrients would be named. Most answers included details on the classification of carbohydrates, noting that not all carbohydrates could be used for energy production. Details on the digestion of each of the nutrients was expected, in order to identify the end products which are oxidised for energy production. There were many excellent accounts of digestion. The breakdown of monosaccharides, fats and amino acids to produce energy, was discussed in great detail by the most successful candidates, whose chemical knowledge of the processes involved was very sound. Diagrams were often used to represent the information. The deamination of amino acids was often omitted from answers.
- (b)(i) There were many excellent accounts of the contribution of iron to energy production. It was known that iron is one of the components of the pigment haemoglobin which picks up oxygen from the lungs and becomes oxyhaemoglobin. The oxygen is carried in the blood stream to all cells where it is used for the oxidation of carbohydrates, fats and amino acids to produce energy.

- (ii) The contribution of thiamin, riboflavin and nicotinic acid was not always well explained. It would have been enough to state that they form part of the enzyme system and that they bring about the oxidation of carbohydrates, fats and amino acids to produce energy in cells.
- (c) There were many possible reasons for the limitation of the body's supply of iron and the B vitamins. Many candidates confined their answer to dietary deficiencies of the nutrients. Although correct, there were many other factors to consider. It was well known that haem iron can be absorbed more readily than non-haem iron and that the reduction of the ferric form of iron to the ferrous form is helped by vitamin C. Consequently, a supply of vitamin C is important. Candidates correctly noted that the presence of phytic acid and oxalic acid hinders the absorption of iron. There may have been an extensive loss of blood due to surgery or accident. If blood is not replaced there will be a shortage of iron. It was correctly noted that vitamin B is water soluble; it can also be destroyed by oxidation and exposure to heat, air and sunlight. Care must be taken during the storage and cooking of foods containing the B vitamins to avoid its destruction.

### Question 2

- (a) The structure of saturated and unsaturated fats was well known. Diagrams were often used to show the formation of triglycerides, saturated fat, monounsaturated and polyunsaturated fats. It was surprising that a few candidates were confused about single and double bonds in the structure of fats. It was expected that all comparisons would contain the information that saturated fats contain only single bonds in their structure, monounsaturated fats have one double bond and polyunsaturated fats have more than one double bond. Credit was given to those who included information on the hydrogenation process during which double bonds are broken, hydrogen is picked up and fats are converted from the unsaturated to the saturated form.
- (b)(i)(ii) A diagram was often found to be a useful way to show understanding of the structure of trans fatty acids and cis fatty acids. Full marks were gained by those who stated, or showed, that two hydrogen atoms are on geometrically opposite sides of the double bond in monounsaturated fatty acids whereas they are on the same side of the double bond in cis fatty acids.
- (c) The important point to be made when discussing the link between fats and coronary heart disease is that cholesterol is found in all animal tissue, therefore animal fats, which are often saturated fats, should be limited in the diet. A detailed description of the deposit of cholesterol on artery walls was expected together with an explanation of the relationship between this and coronary heart disease. Good answers noted the positive effect of High Density Lipoproteins and the negative effect of Low Density Lipoproteins. Examples of foods which have high levels of cholesterol, for example, egg yolk, butter, cheese and red meat, were credited.
- (d) It was well-known that no more than 30% of the energy value of a diet should be supplied by fats. Few answers gave information on the factors which determine energy requirement and most candidates failed to note that energy intake should equal energy output. There were many very good accounts of the functions of fat in the diet, emphasising that fat should not be omitted. The problems associated with too high an intake of fat were discussed. Some candidates correctly noted that saturated fat should be replaced by unsaturated fat in order to lower the level of cholesterol.

### Question 3

- (a) The candidates who chose to answer this question were usually very successful. Each of the nutrients present in vegetables should have been considered together with a named vegetable which was a good source. At least one function of each nutrient was expected. At Advanced Level vitamins of the B group should be considered separately rather than collectively. Similarly starch and sugar should have been addressed individually and not as carbohydrates. The importance of precise information cannot be over emphasised. Credit was given to those for noting that the nutritional contribution of vegetables is affected by freshness, methods of cooking and whether the vegetables are served raw or cooked since some nutrients, especially vitamins B and C, are easily lost.

- (b) Other factors which make vegetables important in family meals were considered rather superficially. Candidates usually gave examples of vegetables which contributed colour and flavour. Some were known to add to the variety of texture in a meal. Mention was usually made of the fact that vegetables have a high water content and, because of this, can help to quench thirst. Their importance as a source of NSP was well documented. Less frequently stated factors were that vegetables can be cooked in a variety of ways and can be preserved to add further variety to meals. They are relatively cheap and can be grown at home. Their calorific value is low so they play an important part in calorie controlled diets.

#### Question 4

- (a)(i) Many candidates were not able to define the term 'water balance'. A simple statement that the amount of water taken in must equal the amount given out was all that was expected.
- (ii) The functions of water are well explained. This part of the question was worth almost half of the marks available for the question so high marks were only available to those who were able to give extensive uses of water in the body. Poorer answers consisted of a list of functions of water such as to control temperature, to lubricate joints, to transport nutrients, to produce body fluids and to help in the elimination of waste. The question asked for explanations of the functions of water; if these were omitted the possible score for this section was significantly reduced.
- (b)(i) Candidates were familiar with the term NSP and could correctly define it as Non Starch Polysaccharide, a complex carbohydrate which is part of the cell walls of plants. It is indigestible and cannot be absorbed by the human body. Credit was given for naming examples of NSP such as pectin and lignin.
- (ii) The functions of NSP were well known. There was a wide range of possible functions. Most candidates explained that NSP absorbs water making faeces soft, bulky and easier to expel. The bulk stimulates peristalsis so the process of excreting solid waste is more efficient. Some answers included the information that NSP reduces cholesterol and absorbs toxins.
- (iii) Some of the better candidates were able to give a range of reasons for a poor intake of NSP; most suggested that there was insufficient fruit and vegetables in the diet. Much of the food eaten in some families is over refined; white flour is used, and white bread and too much convenience food is eaten. It was interesting that several candidates laid some of the blame on advertising and the media. Young children are easily influenced and choose to eat sugary and fatty snacks instead of nuts and dried fruit which have useful levels of NSP. The effects of a low intake of NSP were thoroughly discussed and candidates scored well. Several conditions were mentioned, for example, constipation, diverticular disease and haemorrhoids. The symptoms were appropriately described.

#### Question 5

- (a) A few candidates gave excellent descriptions of different types of flour and were able to give good examples of their uses. This section was worth almost half marks so only very detailed answers scored well. For each type of flour named, for example, stone ground, wholemeal, wheatmeal, strong plain flour and self raising flour, candidates were expected to comment on nutritional value, NSP content, extraction rate, percentage of gluten and any other specific information. Examples of the uses of each type of flour were credited, although no marks were scored for vague information. It was not precise enough to state that strong plain flour can be used for pastry; it is suitable for puff pastry and flaky pastry but should not be used for shortcrust pastry.
- (b)(i) There were many very good accounts of the changes which occur in flour in bread making. It was usually stated that gluten absorbs water and helps the dough to become elastic when kneaded. When carbon dioxide is produced during fermentation, the gluten stretches to hold it. The structure of the product is fixed because gluten, being a protein, coagulates on heating. Most answers contained the information that starch gelatinises with moist heat and dextrin is formed on the outside of the loaf because of the action of dry heat. There was enough detail in most answers to show that the changes which take place in flour were well understood.

- (ii) The role of yeast was also well understood by those who chose to answer this question. The conditions required by yeast for fermentation to take place were stated and details were given on how these conditions could be supplied during the bread making process. Not all candidates were able to give details on the enzymes which are involved in the process. It was hoped that specific enzymes would be named and the reactions in which each was involved described.
- (c) Candidates were less clear on how the time required for bread making could be reduced. Some gave practical reasons, for example, using an electric mixer to save time and adding a little more yeast to allow more carbon dioxide to be produced. It was correctly noted that keeping equipment and ingredients warm encourages fermentation. It would also be quicker to knead and shape the dough before rising; kneading for a second time followed by proving could then be omitted. This was rarely mentioned. Some candidates were familiar with the Chorleywood process and others with the use of vitamin C to speed up the rate of fermentation.

#### Question 6

- (a)(i) Those candidates who chose to answer this question were able to give good accounts of the nutritive value of milk. Nutrients were named and additional information, including the functions of the named nutrients, given.
  - (ii) It was expected that vitamins A, B<sub>12</sub>, C and D, iron and starch would be identified as the nutrients lacking in milk. Further credit was given for suggesting which nutrients might be incorporated into the diet of a six month old child.
- (b)(i) There were many excellent accounts of the advantages of breast feeding; candidates often attained full marks. It was noted that the nutrients in breast milk are in the correct proportion and can be readily absorbed. It contains antibodies to protect the baby against disease and does not cause allergies. It is readily available, free and always at the correct temperature. Most candidates made reference to the bond which is created between mother and baby because of the close contact during feeding.
  - (ii) Answers were not quite as informative on the problems associated with formula milk. Sometimes the points made were merely the opposite of the ones made in the previous section, for example, formula milk does not contain antibodies. The best answers made reference to the dangers of using unsterilised equipment and unsafe water, the cost of buying both the formula milk and the essential equipment and the implications of not following the directions for making up the milk accurately. If the milk is too dilute then the baby will be undernourished and if it is too concentrated there could be kidney damage. The power of advertising was sometimes highlighted. If mothers are persuaded not to breast feed this could lead to financial problems within the household. It is possible that milk will be made up with less milk powder or more water in order to save money. The points made in answers were usually creditable but there were not enough different points or explanations.
- (c) The causes of Marasmus and kwashiorkor were well documented. They were known to be associated with, in the case of Marasmus, too little food and with an insufficient supply of protein for children suffering from kwashiorkor. Most candidates gave good accounts of the reason for the conditions; after weaning, children are often given too much carbohydrate to satisfy their hunger whereas protein is needed for the formation of tissues. Often the cause is a lack of food as happens during a famine. The symptoms of both deficiency diseases were described accurately.

#### Question 7

- (a)(i) Very few candidates were able to describe accurately how a microwave oven heats food. A good answer would have stated that radiant waves, with a wave length of 1 mm to 30cm, are produced by the magnetron. They travel at the speed of light and can penetrate food to a depth of 4cm. Food is heated by the rapid vibration of water molecules within the food which attract microwaves. Thick items are cooked by conduction of heat through the food. Some candidates correctly mentioned that the process cannot take place if there is any metal in the oven because metal will reflect the micro-waves and cause damage.

- (ii) The advantages and disadvantages of owning a microwave oven were well known, but many answers were too brief. Reference to the mark allocation for this part of the question should have indicated the amount of detail required. Candidates usually noted that food is cooked quickly, saving fuel. Food can also be defrosted. As food can be cooked and served in the same dish, there is less washing up. Further points were that there is a minimum loss of water soluble vitamins because there is little or no cooking liquid and that the colour of vegetables is maintained. It was sometimes mentioned that the oven does not get hot during cooking so food splashes do not burn on the walls of the cooker, making cleaning easier.

The most frequently stated disadvantages were that foods do not brown or become crisp so it is not an alternative method of cooking to baking. Large pieces of food cannot be cooked evenly because the rays can only penetrate 4cm. Possible consequence could be food poisoning since the temperature in thicker parts of the food may not reach a high enough temperature to destroy bacteria. The danger of overcooking was often highlighted; because cooking time is short and there is no change in colour or texture, it is difficult to judge when a dish is cooked. The fact that metal dishes or dishes with metallic decoration cannot be used was usually mentioned. A few candidates considered it a disadvantage that only one item can be cooked at a time.

- (b) Many candidates found this part of the question difficult. Three methods of fuel conservation could have been chosen from, amongst others, steaming, pressure cooking, using a fan oven, filling all the shelves of the oven, using residual heat, and choosing a pan with a base to match the size of the hotplate. It was expected that further information would be given to explain how the methods chosen would conserve fuel. Sometimes examples were credited if they added to the explanations. Candidates correctly indicated, for instance, how each tier of a steamer could be used, or named dishes which could be cooked on different shelves of the oven at the same time. Credit was given to any suggested method which could be shown to save fuel.
- (c) There were many excellent accounts of the problems associated with the regular use of convenience foods. The consequences of the high salt, sugar and fat content were mentioned. Convenience foods were known to be too refined resulting in low fibre products which contribute to the incidence of constipation and other intestinal disorders. The loss of sensitive nutrients like vitamins B and C during processing was often mentioned. The long term effects of the additives used in the manufacture of convenience food was a matter of some concern although the reasons for their use were appreciated. Other problems mentioned were the high cost, partly due to advertising and the amount of packaging used, and the small portion sizes. Environmental issues such as the amount of waste generated by packaging were raised; the loss of cooking skills and regular family meal times were noted.

### Question 8

- (a) There are many different uses of sugar in food preparation and it was expected that a wide range of them would be identified and examples of their use given. Additional information to further develop any of those uses was welcomed. Many candidates demonstrated an extensive knowledge and understanding of the contribution made by sugar to food preparation; others were only able to give limited information. It was usually stated that sugar is used for sweetening, for example, hot drinks; it can be creamed with fat or whisked with eggs to trap air into mixtures, enabling cakes to rise when baked. Many candidates noted the use of sugar as a preservative, but often did not give any indication of the percentage of sugar needed to prevent the action of microbes. The use of icing sugar to make different types of decoration for cakes was well documented as was the use of caramelised sugar in confectionery. Different types of sugar were identified and specific uses of each were often given; soft brown sugar can be used to add colour to cakes such as gingerbread and demerara sugar is often served with coffee. Yeast was known to feed on sugar during fermentation. Several additional points were noted in some of the better answers. Sugar helps to retain moisture in baked products like rich cakes, preventing them from drying out; the coagulation of protein in eggs and in gluten is delayed when sugar is present, giving more time for gases to expand before the structure sets; it improves the quality of some frozen products, especially fruit, by preventing the formation of large ice crystals.

- (b) The problems associated with the consumption of sugar were known to be tooth decay, obesity and diabetes mellitus. Candidates wrote at length about all of them. Many gave a detailed account of how acids produced by bacteria break down the sugar in plaque, turning it into lactic acid which erodes tooth enamel and creates dental caries. Others noted that sugar contains 'empty calories'. Any excess sugar is converted into fat which is stored. The psychological problems associated with obesity were sometimes mentioned as was its link to coronary heart disease. Diabetes Mellitus was correctly identified by many candidates as a reduction in the body's ability to metabolise glucose. This can be controlled by monitoring sugar intake. Further information on diabetes and its treatment or control was credited.
- (c) There were many very good accounts of the effect of moist heat on sugar. It was noted that sugar is soluble in water, although it was rarely stated that more sugar will be dissolved as the temperature increases. Candidates correctly observed that when the temperature reaches boiling point the water evaporates. The sugar starts to turn brown as it caramelises. Further heating will cause burning and the development of a bitter taste as charcoal is formed.
- (d) Some candidates were unable to give more than one or two facts about sugar substitutes. It was usually stated that sugar substitutes have no other function than as a sweetener. It was not generally known that they have no nutritive value, can have a bitter sweet aftertaste and are made from chemicals. Their use in diabetic and low calorie diets was, however, acknowledged. Some candidates gave saccharine, sorbitol and aspartame as examples; they noted that some are hundreds of times sweeter than sugar, cannot be metabolised by the body and may be dangerous if used in large amounts. Many candidates stated that such products must undergo stringent tests before they can be used in food and that some people are concerned about a possible link with cancer.

<p><b>Paper 9336/02</b></p>
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<p><b>Practical</b></p>
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### General comments

The quality of the written answers was generally very good. Scripts were clearly set out and candidates seemed to have had sufficient time to answer all sections. Occasionally pages were assembled in the wrong order. Care should be taken with this; it is time-wasting for the Examiner to have to rectify the problem. Pages of the carbonised sheets are numbered for convenience so there should be no difficulty in putting them in order. It is the responsibility of the candidate to see that their work is fastened together properly.

Teachers who mark practical work in Centres are reminded that the mark scheme must be followed closely. The maximum mark available for each dish must be recorded together with the mark awarded. Detailed comments must be written to justify all marks. Single words are not appropriate. To say that a dish was tasty conveys nothing about the colour and texture. Similarly, it is not enough to state that a candidate worked well. All aspects of work should be commented on. A dish which is planned but is not served must be given a zero mark; those marks are not available to be redistributed among the other dishes prepared. The possible marks should be written on individual mark sheets after referring to the dishes chosen on page 1 of the preparation sheets. If other dishes are added during the practical examination they must be disregarded. Teachers in one or two Centres used the boxes for choice, time plan and written work to write their own comments. These sections of the practical paper (**Part A**) are marked in Cambridge; this is clearly indicated on the printed marking scheme.

Time plans were very good and gave clear indications of the methods to be followed, the cooking times and temperatures and, in most instances, the garnishes or decorations which would be used. Most candidates chose an appropriate amount of preparatory work to carry out in the half hour before the start of the practical examination. Care should be taken that none of this work involves the initial stages of the preparation of dishes. Examiners occasionally drew attention to this on the mark sheets. Several candidates give too much information on their time plan. This takes too long to write out and makes the time plan less useful on the day of the practical test. Some candidates left too much work to be done in the last half hour with the result that some dishes were either not served or not cooked properly so marks were lost. The best time plans allowed the last half hour for serving each dish and garnishing or decorating it appropriately. The final washing up can be done after serving ensuring that, as far as possible, everything is completed by the end of the time allowed for the test.

The section of the written work which requires candidates to comment on their reasons for choice was the weakest. Sometimes comments were made on accompaniments which could be prepared with the dish or details given on the occasions for which the dish would be suitable. These are not practical reasons for choice. It was expected that candidates would perhaps mention their choice of easily available ingredients, seasonal fruit and vegetables or home grown produce. Dishes could have been chosen which did not require the use of an oven so that oven management would be easier, or dishes could demonstrate particular skills or might be particularly attractive. Time could be saved by the use of labour saving equipment. There was a wide range of possible points but many responses tended to be repetitive.

The nutritional value of the dishes prepared was discussed well in many cases but candidates are often too vague and do not associate nutrients with specific ingredients. No marks would be scored for stating that a dish contains iron for blood. Credit would, however, be given for noting that the egg yolk in a Genoese sponge cake contains iron which is used for the formation of haemoglobin. At Advanced Level precise and accurate information is expected. The source and the function of each nutrient mentioned should be given. If the same nutrient is mentioned more than once because it is found in more than one ingredient, credit will be given if another function is noted. Many candidates refer to a dish as being 'healthy'; more specific facts are required. Similarly, to state that a dish is a good source of vitamins and minerals is of little value.

### **Comments on specific questions**

#### **Question 1**

This question was attempted by the majority of candidates. The range of dishes chosen to show the use of different types of milk or milk products was wide. Unfortunately there were several instances where the same milk product was used in more than one dish. The uses of fresh milk, cheese, cream, yoghurt, evaporated milk and condensed milk were shown and there was a wide variety of dishes. Although the test did not ask for sweet and savoury dishes to be prepared, most candidates showed both. Unfortunately there was often repetition of skills, for example, many candidates included a roux sauce in more than one dish. Some dishes were a little more simple than expected at Advanced Level but there were many examples of skills such as the preparation of rich yeast dough, rich shortcrust pastry, puff pastry and choux pastry. Cheesecakes and cold desserts with cream were often included because they could be made in advance and served cold. It was encouraging to note the use of time and labour-saving equipment such as microwave ovens, pressure cookers and food processors. Most candidates seemed to use their time to their best advantage.

Written answers were generally good. All candidates were able to name a wide range of types of milk available locally. Comments on the purchase of milk and milk products were often lacking in detail. Facts were correctly stated but not developed. It was usually noted that the expiry date should be checked but there was often little other information. It was hoped that mention would have been made of the need to buy according to the intended use; an example to illustrate the point could have been that those on a weight-reducing diet usually choose skimmed milk because it contains little or no fat.

Advice could have been given to buy in quantities that can be stored, or according to daily needs. The storage of milk and milk products was discussed well. It was correctly noted that milk should be stored in a cool place, in clean containers and away from strongly smelling foods. The need to cover was mentioned as was the warning not to mix old and new milk. Explanations for each point made were expected but were often lacking.

#### **Question 2**

Candidates often made disappointing choices when selecting dishes, each with a different source of NSP. There was a little too much emphasis on fruit and vegetables and too little use of wholemeal flour, brown rice and wholegrain pastas. Fresh fruit, although a good source, could sometimes have been replaced or supplemented by dried fruit in pastry dishes and cakes. Nuts and pulses were seldom incorporated into dishes. There was a wide range of skills and both sweet and savoury dishes were chosen to show the variety of ways in which NSP can be used in dishes. Occasionally candidates used fruit juice which may not be a source of NSP so caution must be advised. There were examples of skills being repeated within a test; sometimes the NSP was in the garnish or decoration. It was intended that NSP would be an integral part of each of the dishes chosen.



There were many excellent accounts of the importance of NSP in the diet. Its function of making faeces soft and bulky by absorbing water was usually mentioned as were the problems associated with a deficiency of NSP. A variety of conditions which result from such a lack were named and described. Better answers mentioned that NSP can reduce cholesterol, bind to bile salts and remove them and be useful to diabetics by reducing the amount of sugar released into blood. Answers were sound and good scores were achieved. It was disappointing that many candidates were unable to state other dietary guidelines and to give reasons for them. Marks were available for stating that the consumption of sugar, salt and fat should be reduced to avoid, for example, obesity, diabetes, hypertension and coronary heart disease. The consumption of fresh fruit and vegetables should be increased in order to ensure an adequate supply of, for example, vitamins A and C and iron.

### **Question 3**

Few candidates chose to answer this question. There were several instances of incorrect choice. There was often confusion about which foods are categorised as meat. The definition is, simply, that all animal flesh is meat. One or two candidates incorrectly assumed that dishes with chicken could be chosen. Another error was that gelatine was included in dishes. Since this is prepared from boiled animal bones, it too must be avoided. Alternatives such as agar could have been substituted. Eggs were frequently included in the dishes chosen as were milk and milk products and sources of LBV. The question did not require candidates to choose dishes which included other sources of HBV protein so, as long as there was no meat, fish or their products, choice should have been straightforward. A wide variety of skills was shown by the majority of candidates.

Most candidates were able to explain at least two reasons why some people follow a vegetarian diet. Religious factors were usually explained and sometimes moral issues were discussed. Few noted that keeping animals on land is considered to be less economical than growing crops, that the cost of meat can be high or that some people do not like the taste and texture of meat. Credit was given to all valid explanations. Accounts of ways to incorporate into meals those nutrients which would have been supplied by meat of fish were not usually very informative. It was expected that other sources of HBV protein would be named, the contribution of LBV protein would be acknowledged and the nature of complementary proteins explored. Sources of iron, vitamins A, B12 and D should have been considered; this was not always the case.

There were a few disappointing choices of dishes using air as a raising agent. It was expected that air would be the main raising agent as in puff pastry, whisked sponge or roulade. Choux pastry uses steam so would not be an appropriate choice and creamed cake mixtures use baking powder or self raising flour so depend on a chemical raising agent. All dishes showed skill, some more than others. It is a pity that when a decorated cake is chosen, skill is confined to the method of preparation; decorative skills make a valuable contribution to the range of skills in a dish.

**Paper 9336/03**

**Paper 3 – Unsupervised Work**

### **General comments**

The individual studies were well presented and indicated a high level of commitment on the part of most candidates. The results were very interesting and the studies themselves were valuable pieces of work. Occasionally the topic chosen was too broad and did not lend itself well to a study of this type. If a subject is something like Dairy Products there is no scope for original research since the amount of information available on the subject already is vast; nothing could be added to what is already in the public domain. Sometimes parameters were not well defined although in the majority of studies the boundaries were clearly set. Some candidates did not identify the group they were studying and failed to appreciate that their results could not be generalised. In some of the weakest studies the information produced bore no relation to the title; in others conclusions were drawn for which there was no evidence. Candidates should be reminded that the title of the special study should be an accurate reflection of its content. It was most helpful when the framework set out in the mark scheme was followed. This is available to all Centres and should be used for guidance. The mark allocation for each section is clearly set out and provided valuable information for candidates. In some instances, whole areas were ignored so the marks available were lost.

### **Choice/Reasons for choice**

In every case the choice of topic was relevant to the syllabus but, as previously noted, parameters were not always clearly defined. A title such as 'Do Packed Lunches Contain Sufficient Protein?' would not represent a study accurately if data had only been collected from six fifteen year old students in a particular class of a named school. A more suitable title could be 'An Investigation into the Protein Content of the Packed Lunches of girls in Class X of Anytown College'. It is important that the limitations of the studies are appreciated. Some studies did not lend themselves to a range of investigative procedures so, again, candidates limited the marks available to them. Candidates should be encouraged to choose a subject for their study in which they are able to demonstrate their ability to collect data in a variety of ways. It is important that reasons for the choice of study area are given. Most candidates gave at least one reason but better candidates gave several.

### **Planning**

It is important that the aims and objectives of the study are clearly set out; when the work is being evaluated there must be clear benchmarks against which the success or otherwise is judged. Objectives should be set out as a list of tasks to carry out in order to reach the goal (the aim). Sometimes the objectives were not operations which could be carried out so they had little value. Many candidates listed their proposed activities and gave dates when tasks were to be carried out or when stages were to be completed. These are very valuable because they encourage candidates to have a structure to their study. Sometimes the amount of time needed to complete a particular part of the study is underestimated. Candidates often comment that the analysis of their data was a lengthy, tedious process. It is important, however, that the time plan includes an evaluation. This gives the opportunity to comment on the success of the proposed plan and allows contingencies to be discussed. Each method of data collection should be considered in detail. It is important that each method is justified. When questionnaires are to be used, information on how respondents are selected should be included, if interviews are to be conducted it is important that reason for selecting particular individuals is justified. This section should demonstrate that candidates are logical in their planning and have chosen methods of data collection which best suit their needs. It was encouraging to find that in most cases the methods of data collection chosen were well justified.

### **Theoretical Research**

In many studies this was the weakest section. Sometimes it was omitted completely; sometimes it consisted of numerous pages of text taken directly from books. This was usually obvious because the writing style was completely different from the candidates' own in the rest of the study. It is essential that this is original work and is the result of consulting a variety of books, texts and possibly web sites. Occasionally complete pages which had been downloaded from the Internet were included. This is not acceptable. All studies included a Bibliography, but it is expected that sources are acknowledged within the text wherever appropriate. If diagrams or charts are included they, too, must be acknowledged. It is important to remember that the work should be of A Level standard. Occasionally the information lacked detail. Although there is no recommended length for the research section of the study, it must be remembered that this should form the basis for the investigative work. The research report should be a summary of all of the relevant information gathered; this was rarely the case. It is not the task of the reader to select relevant facts. The research report should set the scene for whatever is to follow.

### **Investigative Methods**

The most successful studies used a wide range of investigative methods. Many candidates used at least five methods of data collection. Visits were made to factories, farms and clinics, observations were made, questionnaires were conducted, photographs were taken, surveys were made of shops and markets, cooked dishes were evaluated and individuals were interviewed. Photographs are particularly useful because they ensure that the study is unique; they also add interest for the reader and make clear some of the situations and events discussed in the text. For each method used it was expected that the candidates would explain how, when, where, why and with whom the investigations were to be carried out. A sample questionnaire and a list of questions to be used during interviews were usually included. There were a few instances where all completed questionnaires were included; this is unnecessary. Only an analysis of the data collected from the questionnaires is required.

Candidates should be reminded that questions must produce data which can be collated and that objective questions should be asked. It was sometimes stated in the planning section that visits would be made and interviews carried out but there was no evidence that these had actually taken place. It was a matter of some concern that candidates interviewed busy professional people and asked questions which could have been answered by consulting a textbook. Interviews are very useful for finding out about experiences but they should be used with care. Many marks are allocated to this section. A list of methods to be used will gain few marks. The highest marks can only be scored by those who can demonstrate detailed knowledge of each of the methods they use.

### **Collation of Data Collected**

This section is as important as the previous one since each of the methods of data collection must be taken in turn and the information presented. Candidates usually dealt with this section very well, demonstrating their skill at computer graphics as well as their ability to present data without the use of a computer. The best studies showed many different methods although most showed several. The range included line graphs, bar charts, pie charts, comparison charts, prose and photographs. Those who prepared dishes drew up charts to evaluate them or to draw comparisons. Most of the data was well presented although keys and titles were sometimes missing. The data should be presented separately from summaries and conclusions. Occasionally a collection of recipes was included without explanation. There is nothing to be gained from this. Cooking dishes for evaluation and comparison, however, is to be commended.

### **Analysis/Conclusions/Recommendations**

This section was often either omitted or dealt with very briefly. It is important that the candidate presents an accurate summary of the evidence based on the data collected. It is expected that the evidence will be interpreted and conclusions drawn. It is inappropriate to state that 'the data shows that.....' without setting out the supporting evidence. The conclusions drawn should lead the candidate to make recommendations for further action. These could be for implementation by individuals, families, organisations or governments. They may or may not be practical but the importance is that the candidate has demonstrated an ability to develop solutions based on the evidence of his or her study. Weaker candidates listed recommendations which had only very tenuous links to their studies.

### **Evaluations**

This section was not well considered. Many candidates made no reference to the original aims and objectives so were not able to comment on the success of the study. The success or lack of success of the methods of data collection should be commented on; this would be valuable information for future investigations. Suggestions could be made for improving weak areas; the time plan originally made could be considered and a more realistic time scale produced. Sometimes candidates described problems they had encountered and described how they had dealt with them. Most candidates were able to express some personal benefits from the study; some gained confidence, others became more proficient at particular computer programmes and several stated that they had enjoyed meeting people from other backgrounds. All of these are important.

### **Presentation**

The general appeal of the work was good. Contents lists, acknowledgements and bibliographies were included. Most candidates included a diary of activities. The covers were of a high standard and often demonstrated the artistic talent of the candidate. Occasionally there was more than one size of print and a range of different fonts in the study. Care should be taken that there is uniformity throughout. Sometimes candidates acknowledged the help of friends and relatives in typing and illustrating their study. It must be emphasised that the study forms part of the Advanced Level assessment; all of the work submitted must be the candidate's own.