

FOOD STUDIES

Paper 9336/01
Theory

Key Messages

Candidates should select questions with care, ensuring that they are confident about answering the part of the question that contains the greatest amount of credit. There was evidence of candidates having difficulty answering the sections of the question that they had selected which carried the greatest amount of credit, perhaps having been drawn to the question by some small part of it with which they were confident.

Questions requiring simple and straightforward answers were done well, while the answers to more stretching questions needed to contain more explanation or discussion. It is important to avoid lists and bullet points in answers that require discourse. The way in which candidates respond to questions should indicate a progression from O Level.

General Comments

Many centres are to be congratulated on the depth of the candidates' knowledge, particularly on the topics that relate to the macronutrients and digestion; it was evident that preparation parts of this paper had been thorough. Candidates should ensure that they are well-prepared for the newest parts of the specification. Some questions were more favoured than others but it was pleasing to see that all of the questions had been attempted across the different centres.

Comments on Specific Questions

Section A

Question 1

- (a) Many candidates were able to access the majority of the available credit for this question, and knowledge of any two essential amino acids was good. Candidates also needed to say that amino acids are the smallest units of protein that join to make a protein molecule.
- (b) Candidates could gain full credit on this question if they provided a suitable diagram of the primary structure of proteins. There were some very thorough answers to this question and candidates were able to provide good detail about the primary structure of proteins. Candidates should avoid the temptation to write down everything that they know about proteins, regardless of the mark allocation for the question.
- (c) (i) Most candidates were able to explain that amino acids are pooled in the liver and taken to the body cells for synthesis. Few candidates however explained that the body is able to obtain amino acids through transamination.
- (ii) This question was well answered and candidates were aware that proteins are required for structural and functional purposes within the body. The best answers explained that the requirements for amino acids can change due to pregnancy or illness.
- (d) Very few candidates knew that metabolic water is a by-product of oxidative metabolism of macronutrients.
- (e) Few candidates stated which foods should be avoided. Some candidates described the symptoms in the body of phenylketonuria but these were not asked for.

- (f) This question was generally well answered and candidates were able to demonstrate their sound knowledge of the functions of nutrients. Iron, vitamin D, and the B vitamins were the responses seen most often. Many candidates knew that red meat contains fat but few were specific enough in stating that the fat is saturated. Some candidates were also too vague in their responses about the B vitamins and did not specify which B vitamins were responsible for which function in the body. At A Level, accuracy is expected and the question specifically asked for the nutrients found in red meat, not offal.

Question 2

- (a) This question was particularly well answered and candidates were able to provide a suitable diagram to gain full credit.
- (b) Many candidates were able to gain the majority of the available credit on this question and explain with clarity the roles of the named organs.
- (c) To be able to access all the credit available for this part of the question candidates required clear knowledge about omega 9. Accuracy was expected, and candidates could access credit for naming two correct foods if they stated specifically which named fatty acid was provided by which named food. Often candidates wrote a generalised sentence stating that omega fatty acids could be found in oils, nuts and seeds.
- (d) Many candidates were able to demonstrate their excellent knowledge of vitamin E when answering this question. All points on the mark scheme were seen in the answers to this question.
- (e) There were some excellent responses to this question about lecithin, though very few diagrams were seen. The strongest answers were those that described the oil in water or water in oil emulsions.
- (f) Candidates showed good knowledge of how to store olive oil most effectively to maintain its good flavour, appearance and aroma. Full credit was gained by candidates who were able to give a storage point with a reason and by those who identified hydrolytic and oxidative rancidity rather than just rancidity.

Question 3

- (a) This question was designed to test the candidates' knowledge of healthy eating whilst testing their ability to structure a mature discussion about food choices. Candidates found this challenging. At A Level candidates are expected to respond in a more sophisticated manner than at O Level and the responses should have shown a relationship between poor eating habits and ill health and healthy eating habits and good health. Candidates should avoid taking every nutrient that they could think of in turn and discussing its functions at length, or taking the question as an opportunity to discuss the special diets of the elderly and women who are pregnant.
- (b) This question on energy balance was very well answered and most candidates were able to explain that food labelling provides information on kcal content per 100 g. Candidates who said that labelling was helpful as it provided nutritional information were not awarded credit for this.
- (c) Candidates were able to suggest a wide variety of ways in which nutritional information could be obtained in their locality.
- (d) In this question candidates were expected to think carefully about the many convenience foods that are available on the market that could be considered to be healthy options. Most candidates were able to give the definition of a convenience food and gained credit for this. Candidates also needed to give thoughtful responses about how convenience foods can be made to be low in fat, sugars and trans fats, or how they are adequate portion sizes and high in fibre.
- (e) This question on fortification was generally well answered. Accurate references were made to margarine, breakfast cereals and milk, though few candidates mentioned bread or fresh orange juice being fortified. It was necessary to provide the name of the food that is commonly fortified and with what nutrient to gain the credit.

Question 4

- (a) Candidates showed good knowledge of how fats have a range of melting points, smoke points and plasticities. There were some inaccuracies when suggesting actual smoke points for named fats but this was not asked for in the question.
- (b) (i) This question on the need to increase water intake was very well answered and candidates showed good knowledge.
- (ii) Candidates provided an accurate response to this question and most were able to say that a lack of vitamin B1 can lead to beriberi. Many candidates stated that there is wet beriberi and dry beriberi but there was confusion about the symptoms for each. Accuracy is expected at this level.
- (iii) Knowledge of megaloblastic anaemia and pernicious anaemia was excellent.
- (iv) Most candidates showed good knowledge of where and how energy is stored in the body, but few candidates explained clearly that glycogen stores are for a quick release of energy and that fat stores are released slowly in times of hunger or when trying to lose weight.
- (c) (i) Candidates need to be able to recall the correct chemical equation for respiration.
- (ii) This question was mostly well answered with candidates gaining full credit. It was necessary to say that thyroxine controls the rate of metabolism to gain all the credit.

Section B

Question 5

- (a) (i) Some candidates were unsure of the sources of E. coli infection. Very few candidates were able to state that raw meat and animal faeces or the intestines of animals are common sources of E. coli. Candidates were however confident of the symptoms of food poisoning.
- (ii) Candidates did not seem to be aware that E. coli infections can be prevented by avoiding unpasteurised milk and fruit juices. Many candidates made reference to cooking meats and testing the core temperature, however, there were inaccurate core temperatures given or simply “hot temperature” which is not enough detail. Some candidates saw this question as an opportunity to list a number of personal hygiene points, but this was not asked for.
- (b) Some good answers were seen to this question with candidates suggesting that an increase in the use of convenience foods, and the practice of large scale catering might lead to careless hygiene patterns. Candidates could have accessed many of the points on the mark scheme by discussing importation of foods, factory farming or BBQs and street food style cooking.
- (c) It was important on this question that candidates recognised that the question was asking for an explanation of kitchen hygiene guidelines and not personal hygiene guidelines. There was no credit available for personal hygiene points. Candidates who explained that cross contamination occurs when bacteria are transferred to a **cooked or ready-to-eat food** were awarded most credit.
- (d) There were some excellent examples of chemical contaminants given in response to this question. Most notably candidates referred to insecticides, fertilisers, industrial pollutants, nuclear waste, soaps, bleaches, fly sprays and packaging residue. To gain full credit, candidates were required to give the example of the contaminant and explain how that contaminant could enter the food chain.
- (e) Having thought of examples of chemical contaminants in the previous question, many candidates began to repeat their responses for this question. This question aimed to make candidates think deeply about where food comes from and its supply chain. There are many ways in which the food supply chain can be sabotaged, infected, poisoned or cut short. Few candidates gave more than one or two examples.

Question 6

- (a) (i) Most candidates were able to define the term 'cash crops' with clarity and gave good examples of a cash crop. Some candidates confused cash crops with GM crops.
- (ii) Many candidates found this question challenging. A few suggested that the LEDC might be better off for growing cash crops and providing they were able to justify this statement, credit was awarded. However, the main thrust of the idea that LEDCs export cash crops to the rest of the world whilst their native people go hungry was not identified.
- (b) Most candidates offered suggestions of how to shop thriftily in supermarkets with the use of vouchers and a shopping list. Few candidates realised that they were being asked to explain why people might have ethical views on what should and should not be purchased from supermarkets.
- (c) Many candidates answered this question well and gave thoughtful responses about how livestock should be transported whilst in good health and with dignity and how fragile foods should be given anti-crush cushioning. To some extent this question was about food packaging, but it was about secondary and tertiary packaging. Candidates who explained how foods should be packaged, for example, in sealed plastic wrappers, were not awarded credit. If a candidate wrote that foods should be transported in a freezer lorry, that would only have been awarded credit if more detail had been included, for example, frozen fish fingers should be transported in a freezer lorry.
- (d) This question was answered very well and candidates showed good knowledge of the dangers posed by a piece of electrical kitchen equipment.
- (e) Most candidates were familiar with the idea of a kitchen work triangle and were able to explain its use in saving time and effort. It was important for candidates to mention the hob, sink and refrigerator being the three corners of the triangle if they were to gain full credit.

Question 7

- (a) (i) Many candidates had excellent knowledge of the details of making flaky pastry and it was clear that they had made flaky pastry in a practical situation. There were candidates who were unclear about the amounts/ratio of ingredients required in a flaky pastry recipe but most candidates did know which ingredients are in the recipe.
- (ii) This question was generally well answered with some excellent responses about butter adding colour, flavour and a flaky texture and water evaporating on heating to create steam in the pastry to lift the layers.
- (b) (i) Candidates showed very good knowledge of conduction and convection and answered this question well.
- (ii) Candidates gave an excellent outline of how to use an oven safely, efficiently and economically. The strongest answers included a balance of responses to cover all aspects of the question and explained the points rather than just listing them.
- (iii) The accepted temperature range for this response was 200 to 220 °C.
- (c) Many candidates were aware of the acidic nature of cream of tartar, knew that it produced carbon dioxide when combined with a warm liquid and were able to suggest a typical food use, with the most common food example being meringues.

Question 8

- (a) Those candidates that identified cellulose as being made up of β -glucose molecules were mostly able to achieve full credit on this question with their description of the large insoluble molecule. Many candidates recognised that humans do not synthesise the enzyme necessary to break down this molecule.
- (b)(i) Candidates needed to name two correct fruits to obtain the credit. Many candidates were able to supply only one correct fruit.
- (ii) Almost all candidates were able to name the polysaccharide pectin.
- (iii) This question was well answered and candidates were aware of the setting qualities of pectin.
- (c) Candidates should be aware of how the over-consumption of non-starch polysaccharide (NSP) can lead to diarrhoea and bowel irritability. Candidates needed to explain, by using examples of NSP rich vegetarian meals, how it is easy for a vegetarian to be exposed to too much NSP.
- (d) Candidates need to give more detail about the production of mycoprotein products. Many candidates wrote about the production of soya products and were unaware of the fact that mycoprotein is not related to the soya bean plant.
- (e) Candidates need to show more knowledge about mycoprotein products. In order to gain credit, candidates were expected to express how a product such as Quorn is a healthy option due to its low fat content, low sodium content, high fibre content and low sugar content.
- (f) Some candidates did well on this question and whilst they may not have had prior knowledge of these exact additives were able, with some thought, to work out what the uses of these additives were in the food product.

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<p>Paper 9336/02 Practical Test</p>

Key Messages

- Centres should ensure that the Preparation Sheets and Practical Test Working Mark Sheets used are those relevant to the current (2017–19) syllabus. Centres are reminded that all the work carried out in the Preparation Session is marked externally.
- The mark scheme for the Practical Test must be followed accurately. For example, if a skill is repeated in other dishes, the maximum credit must be reduced on the second and any subsequent occasions; credit for each dish should be awarded according to the skill demonstrated. Some candidates chose dishes that were not appropriate or were not sufficiently skilful for an Advanced Level Practical Test.
- Any dish planned but not served may not be awarded any credit and credit cannot be transferred to other dishes. Any dish prepared but which is not on the original Time Plan cannot be awarded credit.
- Detailed comments must be written to justify the credit awarded. Reference should be made to the colour, flavour, texture and consistency of dishes, as appropriate. It is important that examiners give as much information as possible on each candidate's method of working, in order to justify the credit awarded. When the practical examination is marked by two separate examiners, they must reach a consensus mark for each candidate.

General Comments

Candidates' Time plans were generally very good and gave clear instructions on methods, cooking times and temperatures. Most candidates listed an appropriate amount of work to be carried out in the 30 minutes of the Preparation Session before the start of the Practical Test. Candidates should be reminded that they must not include any processes during the Preparation Sessions that are directly part of the preparation of dishes. Some centres allowed too much work to be undertaken during the Preparation Session.

Dishes need to be skilfully prepared for candidates to be awarded maximum credit; this cannot be the case when dishes are too simple. Dishes such as choux buns filled with crème pâtissière will gain more credit than choux buns filled with cream. Dishes like rice pilaff and gulab jamun are not considered to require sufficient preparation skills.

In **(b)**, most candidates made a cake by the creaming method and there were many different decorative techniques used.

In **(c)(iii)**, candidates are required to give practical reasons for their choice of dishes. This was not answered very well by many candidates. In all instances examples are needed, such as which vegetables are in season when referring to seasonal vegetables.

In **(c)(iv)**, candidates were asked to comment on the nutritional value of the dish chosen in **(b)** but some answers related to all the dishes chosen. There were some excellent accounts but there were also a number of vague responses. Precise information is required at Advanced Level. Nutrients must be linked to ingredients and to functions.

Comments on Specific Questions

Question 1

In **(a)**, many candidates used at least three different carbohydrate foods, but few used four different types. Some candidates gave incorrect examples of carbohydrates. The main examples chosen were types of flour, such as cornflour and rice flour. A variety of dishes were made, including pancakes filled with a meat sauce and then topped with a roux sauce, which demonstrated a variety of skills as well as the use of plain flour. Some candidates made yeast dishes or pastry dishes.

Part **(c)(i)** was generally answered extremely well. In **(c)(ii)**, many candidates discussed three health problems in detail and gave three ways to reduce sugar consumption.

Question 2

In **(a)**, most candidates selected four dishes which showed four different uses of eggs. Dishes chosen were generally quiches, which showed setting/coagulation; pastry or yeast dishes which showed glazing; choux pastry which showed the use of eggs as raising agents; and fish cakes which showed coating.

Part **(c)(i)** was generally answered well with candidates gaining much of the available credit for describing protein digestion and absorption. In **(c)(ii)**, most candidates gave at least three ways in which eggs can be used in cooking with correct examples.

Question 3

In **(a)**, most candidates chose correct examples of dishes to show how the micronutrients could be incorporated into the diet. Many candidates chose milk or cheese for calcium and made quiches; some candidates also chose to put spinach into their quiches. For iron, most candidates used liver to make gougères, or dark chocolate to make cheesecakes. A variety of dishes were made for vitamin A, many involving carrots. For vitamin C, many candidates used fruit and made savarins topped with kiwi fruit and strawberries, or fruit flans with a variety of fresh fruit.

Part **(c)(i)** was generally answered well. In **(c)(ii)**, there were not many correct responses for foods to avoid during pregnancy although some candidates mentioned soft cheeses and undercooked eggs.

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<p>Paper 9336/03 Coursework Investigation</p>

Key Messages

- Centres are strongly encouraged to make **Section 7** of the syllabus, which provides details of the specific requirements of the Coursework Investigation.
- Candidates should investigate topics which are appropriate to the syllabus.
- Reference should be made to the original aims and objectives in both the conclusion and evaluation.
- Candidates should use paper for their Coursework Investigation rather than card.
- Centres must ensure that all work submitted is the candidate's own.

General Comments

The majority of the Coursework Investigations were well presented, logically organised, interesting and informative. Many titles showed originality of thought and freshness of ideas.

Most candidates' investigations were valuable pieces of work produced as a result of a high level of commitment to their chosen topic. The better-performing candidates had selected well-defined titles which were set within clear and realistic boundaries. They had also followed the framework given in **Section 7.2**; used both quantitative and qualitative investigation procedures; and reached conclusions which reflected initial aims and objectives.

Sometimes the title of the investigation made it challenging for the candidate to show their skills in all areas demanded by the Coursework Investigation task. Tasting panels should be set up to make clear comparisons. The wording and layout of questionnaires should be appropriate to the target audience.

Many candidates provided appropriate photographic evidence for tasting panels, visits and market surveys.

Choice and justification

In almost every case the choice of topic was relevant to the syllabus and better-performing candidates identified from which section in the syllabus content their ideas had originated. It is important that candidates state the reasons for their choice of investigation title. Most candidates gave at least one reason. Appropriate reasons for choice could be that a subject is of personal interest, relevant to world health issues or topical in local media.

In this section, candidates are expected to state clearly but briefly the investigative methods and resources they intend to use to use their investigation.

Occasionally, topics were chosen which gave no opportunity for individual research or to only a limited range of investigative procedures. When choosing their area of study, candidates need to define the parameters clearly, to highlight the limitations of their investigation.

Planning

In this section the aims and objectives of the investigation must be clearly identified. Candidates should give several objectives, since these are the benchmarks against which the success of the investigation can be judged. Success against the objectives should be measurable.

It is important to explain how each method will help to achieve particular objectives. Some candidates mentioned the methods they intended to use but gave no further information to link the method to stated

objectives. When questionnaires or interviews are used, how respondents are selected should be explained and there should be a rationale for the type of questions included. If visits, observations, market surveys or tasting panels are used, explanations for choosing these methods of data collection should be given.

It was encouraging to see that some candidates compiled a chart to highlight *how, where, when* and *with whom* the investigations were to be carried out. They also included which of their objectives were being met, as well as how results would be collated.

As indicated in the assessment scheme, samples of questionnaires, interview questions etc. should be included in the appendix.

Candidates should demonstrate their ability to be logical in their planning. Many candidates listed their proposed activities giving dates when tasks or stages were to be executed or completed. Some candidates made use of Gantt charts which were very valuable as they encourage candidates to have a structure to their investigation. Some candidates only produced a diary of activities. Although this shows how the investigation progressed, it does not constitute a plan.

Theoretical research

All investigations gave evidence of some research but the amount and quality was variable. In many investigations this was the weakest section. What was required was a succinct account tailored to the title of the investigation rather than numerous pages of text taken directly from books. Many accounts were disjointed and too long because every available piece of information from one source was followed by that from another, so there was considerable repetition of information, as well as differences in writing style and presentation. The accounts must be the candidate's own work.

All investigations included a bibliography as an appendix. This should include the full URLs of websites used as sources of information. Sources should also be acknowledged within the text. If photographs, diagrams or charts from secondary sources are included, they too must be acknowledged.

Investigative skills and data handling

The most successful investigations used a wide range of qualitative and quantitative investigative methods to collect data. Many candidates used at least five different methods. Possible methods are suggested in the syllabus.

Some candidates visited local markets, shops, farms, bakeries, factories and clinics, others observed, conducted questionnaires and compared and evaluated cooked dishes. Many photographs were included which were particularly useful to support the authenticity of the investigation.

Most candidates included copies of letters or emails sent and received, and of questionnaires and interview questions in an appendix. Relatively few candidates showed evidence that questions had been pre-tested.

When compiling questions to include in interviews or questionnaires, candidates should give careful consideration to each question. Questions must produce data which can be collated and analysed. The purpose of interviewing each interviewee should be clear and justified.

Candidates are encouraged to use food diaries or food frequency tables, where relevant to their investigation. Check lists can be a useful feature of such diaries and tables.

Candidates often included recipes in their investigations without any justification. Every aspect of the investigation should have a purpose and should be part of the original plan.

Findings were generally well presented. Many candidates presented their information in a wide range of different ways with the inclusion of titles and appropriate annotations.

Conclusions

This part of the investigation was often carried out in a very perfunctory manner. Candidates should provide a detailed summary and analysis of the evidence collected based on their investigative and theoretical data. Conclusions must be supported by facts from the empirical data which can then lead to relevant recommendations linked to the original aims and objectives. These recommendations could be for implementation by individuals, families, organisations or governments.

Evaluation

Many candidates wrote very briefly and from a personal perspective. Each process in the investigation should be reviewed and comments made about the strengths and weaknesses of the work. The evaluation section is an opportunity to revisit and review the whole investigation and make suggestions for improving weaker areas and extending the research.

Candidates should consider whether the original aim and each objective have been achieved. Better-performing candidates re-listed their objectives and provided evidence of where in the investigation these had been met.

The plan should be reconsidered and constructive judgement given to the original proposed time frames, comparing the expected time taken with actual time needed.

The degree of success of each of the methods of data collection and collation used should be analysed and critically appraised.

Most candidates stated personal benefits from carrying out the investigations.

Presentation

Candidates are to be congratulated on the presentation of their work.

Almost all candidates submitted work which was logically and sequentially organised. Most investigations included a list of contents and a bibliography and pages were numbered. Candidates must adhere to the word limit; in some centres candidates had included a word count on the front cover, which was very helpful.

Some candidates had included pamphlets and posters that they had designed themselves as part of their investigation.