

# FOOD STUDIES

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Paper 9336/01  
Theory

## **Key messages.**

Some of the responses showed a good knowledge of the facts.

Sometimes responses addressed only part of a question, where it was necessary to address all parts of a question.

There is a requirement for knowledge to be applied. Some responses could include more analysis and evaluating by the candidate.

## **General comments**

All candidates were able to access the questions and correctly chose four questions. All of the optional questions were attempted across the different centres.

## **Comments on specific questions**

### **Section A**

#### **Question 1**

- (a) (i) Many candidates correctly named two essential amino acids, though it was necessary to correctly name four. Some candidates confused essential amino acids with fatty acids.
- (ii) Most responses named the two essential amino acids required for children.
- (iii) A few candidates were able to name an amino acid that contains sulfur. This question was often not attempted.
- (b) Good responses gave a full definition of protein quality. Other responses only stated part of the definition, which needed to be expanded on.
- (c) Many candidates correctly referred to the use of tofu and soya with beans and pulses. Many candidates who referred to flour/bread or rice did not refer to wholemeal flour/bread or brown rice. The missing essential amino acid would not be found in white versions of these foods.
- (d) Most candidates showed a sound knowledge of micronutrients linked to a particular function. Some candidates discussed macronutrients instead of micronutrients, which was not asked for in the question.
- (e) Haemoglobin and myoglobin were the most frequently seen correct responses. A small minority of candidates correctly identified that a conjugated protein has a prosthetic group, though made no reference to covalent bonding.
- (f) Many candidates' responses to this question showed a good understanding of the term endocytosis. Best responses related the process of endocytosis to nutrient molecules.
- (g) Most candidates answered this well and showed good knowledge of kwashiorkor and marasmus. Some responses confused the symptoms of the two diseases.

## Question 2

- (a) Most candidates correctly stated that essential fatty acids are not manufactured by the body. The most frequently seen correct example of an essential fatty acid was Omega 3, with very few candidates giving linoleic or alpha-linolenic acids.
- (b) Many good responses named fatty acids.
- (c) This question was answered well. Good responses took each type of fatty acid in turn, and described the appearance of the carbon chain and then drew a diagram showing a correctly balanced molecule. Some responses gave physical descriptions of solid fats and liquid oils, which was not asked for in the question.
- (d)(i) The term triglyceride was well known. A common, incorrect response stated that a triglyceride is made up of three glycerol plus one fatty acid.
- Most responses did not define nor describe the term serum cholesterol.
- (ii) Candidates who responded well to this question described the appearance of cholesterol, with many responses stating it is white and fat. A response showing knowledge about cholesterol would need to be expanded to identify its functions in the body to fully respond to the question. Responses regarding coronary heart disease needed to identify functions like the synthesis of bile acid or the synthesis of steroid hormones to be fully correct.
- (e) Some candidates correctly described the role of LDL as carrying cholesterol away from the liver. Other responses focused on the role of cholesterol rather than LDL, which was not asked for in the question. Some responses referred to LDL as 'bad cholesterol', which is not as accurate as referring to it as LDL.
- (f)(i) Many candidates correctly stated that Vitamin E is an antioxidant. A few candidates provided a good explanation that as an antioxidant, Vitamin E is able to prevent cholesterol in the blood from absorbing oxygen.
- (ii) Candidates need to be aware that when asked for one good food source, the first response will be the one that is marked if a list is given. Responses giving specific food names were far better than a generic response of 'green leafy vegetables'. A few candidates were aware that Vitamin E is found in many vegetable oils and most candidates correctly cited seeds.

## Question 3

- (a) This was well-answered. Passive absorption was known to be diffusion without the need for ATP. Osmosis was known to be the diffusion of water molecules.
- (b)(i) Most candidates correctly identified the organ and enzyme.
- (ii) Most candidates correctly identified stomach and pepsin.
- (iii) Many candidates used the information provided in the leader to the question and gave the mouth and amylase as the answer. These responses could have been expanded to explore the meaning of complex carbohydrates.
- (c) The role of the lacteal capillaries and a connection to the lymph or lymphatic system was correctly shown in a few responses.
- (d) Better responses explained the meaning of coeliac disease and went on to explain how undernourishment might occur. Many candidates were aware of the main symptoms, though dizziness, which was often cited, is not a main symptom of coeliac disease.
- (e) Many candidates did very well on this question. A common misconception was that liver should be avoided for its high iron content and not for its high vitamin A content.

- (f) A few candidates did well on this question by showing that DRVs relate to percentage nutrient content. Inaccurate responses discussed other food labelling or related DRVs to type of nutrient content or calorie content.

#### Question 4

- (a) (i) The correct response, scurvy, was often given.
- (ii) A few correct responses discussed what occurs when there is a lack of vitamin C. Describing the functions of vitamin C in the body was not enough.

Good knowledge about the lack of iron leading to anaemia was seen, however, candidates rarely made any reference to jaundice. It was rare to see a response where a candidate made a connection between the lack of vitamin C and poor collagen synthesis. The connections to leaking blood vessels and damaged heart tissue were not made.

Candidates would have found this question easier to respond to if they had taken each of the conditions in turn. Instead, many candidates merged the two conditions and their responses.

- (b) Blood clotting was nearly always given as the correct response.
- (c) There was a good awareness of the damage caused by free radicals and candidates showed knowledge of the need to combat free radicals. Responses would be better if they also explained that free radicals can cause damage due to their unpaired electrons. The question did not ask for examples of vitamins, but often a list of vitamins known to be antioxidants was given.
- (d) (i) This question was answered well.
- (ii) Many candidates scored well here, naming cobalamin and showing knowledge of a link to red cell production or normal nervous system function.
- (e) (i) Thirst and kidney damage were common, incorrect answers given. A correct response showed symptoms of chloride deficiency.
- (ii) Many candidates were able to say that heavy sweating could cause chloride deficiency. Other good reasons for a lack of chloride were prolonged vomiting, overuse of diuretics, widespread burns or kidney disorders, and these reasons were seen in a few responses.
- (f) Most candidates gained one mark for the concept of replacing lost water and salt through sweating. Water balance needed to be discussed for a full response.
- (g) A good number of candidates discussed the breakdown of body fat for energy. Some candidates gave well-explained reasons, including being on a low carbohydrate diet. Insulin could have been included for a good response.

#### Section B

#### Question 5

- (a) Candidates who scored well on this question used the terms myoglobin and oxymyoglobin and had an understanding of these terms. Detail of ferrous iron being converted to ferric iron was given in a few excellent responses. Meat decomposition was incorrect.
- (b) Candidates who were able to provide the correct sequence of production scored well on this question. Most responses showed good knowledge that the soya bean is defatted. Detail of temperatures used in the process was given in a few responses.
- (c) This was a challenging question for most candidates.
- (d) The question was answered well by many candidates. Correct responses mentioned most frequently were allergies, safety and hyperactivity.

- (e) Responses here required a discussion and candidates were expected to say how a person may or may not choose supermarket foods that help the environment. Good responses stated why, for example, a consumer should buy organic food or other reasons for food choices.
- (f) This was a challenging question for most candidates.

### Question 6

- (a) Good knowledge of protein coagulation and temperatures was shown in these responses. Most candidates also knew that the white of the egg became rubbery if overcooked. There was little mention of syneresis or description of it. Inaccurate statements of a black-green ring were sometimes given, though some candidates correctly wrote 'round the outside of the egg' or the 'yolk turned green/black'. There was a good deal of evidence that some candidates had knowledge of iron sulphide causing the discolouration.
- (b) Most good answers systematically started with conduction and moved on to convection. Diagrams were included but rarely contributed anything new to the written comments. Convection details were of better detail than those for conduction.
- (c) This was very well-answered. Some candidates discussed enrichment due to HBV protein, but nutritional points were specifically excluded in the question itself.
- (d) Many responses to this question correctly gave the key points. An explanation would have improved these responses.
- (e) In response to this question, candidates often correctly defined factory farming as a type of farming that involves the rearing of animals. An explanation that the animals are farmed in large numbers would improve these answers. Many correctly talked about the poor conditions of the factory farms, the inhumane treatment, the diseases and the tiny spaces. Most candidates were able to suggest the typical animals that are farmed in this way and gave correct examples of foods. Points about the use of cages, hormone injections and being fed rather than foraging, were commonly seen.
- (f) (i) This was correctly answered.  
(ii) This was correctly answered.

### Question 7

- (a) This was very well-answered.
- (b) There was good awareness shown that rubbed in mixtures give a crumbly or short texture. Candidates who wrote the term 'melt in the mouth' did not score a mark as other foods melt in the mouth, but are not of a short texture. A few excellent responses stated that butter coats the flour.
- (c) Scones, biscuits and quiche were commonly seen correct answers.
- (d) This question was challenging for candidates. A knowledge of gelatinisation was required. Many responses correctly added extra vegetables but did not explain how this would thicken the soup. Corn starch was disallowed in the question itself. Those candidates who suggested adding potatoes correctly mentioned the starch content and showed good understanding of gelatinisation. Some candidates suggested adding mashed potato but this would already have gelatinised. Pureeing the vegetables was sometimes suggested but without an explanation of how this would release starch into the liquid. A few candidates suggested reduction but did not use the correct terminology.
- (e) Many candidates correctly named the Maillard reaction and the link between protein and reducing sugar. It was common to see the amine and carboxyl group referenced and candidates were aware of the need for heat. Some candidates focussed on browning but discussed dextrinization and caramelisation. A few excellent responses discussed melanoidins.
- (f) (i) Some candidates were very knowledgeable about *Clostridium perfringens* and knew it was in soil and raw meat, was spore forming, heat resistant and released toxins.

- (ii) Correct answers cited groups of people who are immunosuppressed. Some responses cited 'low immunity' for their groups. Explaining why each group had low immunity would have improved these responses.

### Question 8

- (a) Candidates did reasonably well on this question but the sequence of production was not always logical. An example of this would be the bacterial culture being added after the rennet or salt being added as the whey is drained.
- (b) This question was challenging for candidates. Some candidates correctly gave reasons for the cause of the problem such as the oil was added too fast, the egg came straight from the fridge, the egg was too old and the wrong proportion of oil was used. Better responses included reasons these examples caused the emulsification to fail.
- (c) (i) Most candidates showed an awareness of what a puree is. Better responses described how to make puree.
- (ii) Some incorrect responses included the chopping of raspberries, the addition of cornstarch and adding gelatine to set.
- (d) Many candidates showed a good understanding that the sugar was concentrated, making water unavailable and inhibiting microbial activity.
- (e) This question was well-answered. An extended answer was not required. Some candidates gave unnecessary descriptions of using a fire cooker as it uses wood and is cheaper than an electrical one. Sometimes an incorrect answer of the use of a microwave as a way to save fuel was given.
- (f) Some correct responses stated not having wet hands as you may get an electric shock, and being careful when drying or removing the blade as it is sharp and may cut you. Many candidates wrote 'read the instruction booklet'; a reason why this made the use of the blender safer would improve that response.

# FOOD STUDIES

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<p><b>Paper 9336/02</b> <b>Practical Test</b></p>
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## Key messages

- The quality of the written answers was generally good. Scripts were set out clearly and most candidates completed all sections of the paper. Occasionally pages were assembled in the wrong order. It is the responsibility of each candidate to ensure that their own pages are in order before the scripts are handed in.
- Time plans were generally very good and gave clear instructions on methods, cooking times and temperatures. There are one or two centres that gave the time it takes to complete each process instead of working through a chronological plan of work. Most candidates listed an appropriate amount of work to be carried out in the half-hour preparation time before the start of the Practical Test. There is still evidence that some candidates are not completing the practical work in the correct sequence. Savoury dishes that should be served hot at the end of the test are being kept warm for the duration of the test or cakes that need to be cooled are too warm to decorate. Candidates should be reminded that the preparation time should be used to weigh ingredients, collect utensils and pans, and not to start preparing their dishes. It was found that some candidates were preparing yeast mixtures, and dissolving gelatine during the preparation time.
- The section of written work requiring candidates to give practical reasons for their choice of dishes was answered well by a minority of candidates. Sometimes it was noted that seasonal produce or garden produce would be used. These responses could be improved by stating which fruit/vegetables are in season or which ones are grown in local gardens. Sometimes comments were made about the type of meal for which the dish would be suitable or suitable accompaniments for the dish. These are not practical reasons for choice. Good responses might mention that the cost was not high with examples e.g. chicken thighs may be cheaper than chicken breast. Other points could have been that a dish was to be served cold and did not require the use of an oven thus making oven management easier or that the use of labour-saving equipment was demonstrated with examples. Candidates should also discuss the skills that they are using e.g. the apple pie is made using shortcrust pastry, the cream buns are made using choux pastry, the pizza is made using a yeast mixture, the Victoria sandwich cake is made by the creaming method, etc. Also, many candidates were stating that a dish was easy to make or didn't require much skill – dishes should be skilful.
- Candidates were asked to comment on the nutritional value of the dish chosen in part (b) of the question. Best answers related to the specific dish for that question. Some answers, however, related to all the dishes chosen in the whole of the written section. There were some excellent accounts. Other responses were vague and could be improved with more precise information, for example, that egg yolk contains fat, which is a source of energy, or that HBV protein, which is important for growth, is obtained from milk. Some answers stated that the dish contained iron or protein, and could be improved by stating functions of the nutrients as well. Some candidates calculated the amount of nutrients in the dish, but once again, the nutrients need to be linked to functions. Three pieces of information are needed for each mark i.e. food, nutrient and function.

## General comments

- Most marking complied with the rules outlined in the syllabus. However, some centres showed high marks for very simple dishes. Reference must be made to the list of dishes planned on page 1 of the Preparation Sheets. If a dish lacks skill, the dish must be marked accordingly. If a skill is repeated in other dishes, the marks must be reduced on the second and any subsequent occasions. The marks left over cannot be transferred to other dishes.

- Before the Practical Test, the Examiner must prepare an Individual Mark Sheet for each candidate. The maximum mark available for each dish, together with the mark awarded, must be clearly indicated on the Individual Mark Sheet. Some candidates chose dishes that were not appropriate or were not sufficiently skilful for an Advanced Level Practical Test. Fried chicken and fried rice are examples of such dishes. If a candidate does choose a simple dish, the maximum mark possible for that dish must be reduced. Each dish should be awarded according to the degree of skill demonstrated. Teachers who are undertaking the examining of practical work must always follow this guidance. It is rare for any dish to be worth full marks and is certainly unlikely that all dishes prepared by a candidate will be worthy of full marks. Teachers must use their discretion and their professional judgement to ensure that the maximum mark for each candidate fairly reflects the dish, taking into account its complexity.
- Detailed comments must be written to justify each mark awarded. It is not enough to use single words to describe results, e.g. 'satisfactory' or 'good'. Reference should be made to the colour, flavour and texture of dishes and perhaps to consistency, if appropriate. Occasionally, Examiners made one statement to cover all dishes. For example, 'Everything this candidate produced was excellent in every way'. This is inappropriate because it does not consider the merits, or otherwise, of individual dishes. Sometimes the mark awarded seemed to be too high when comments suggested that there were many negative points to be considered when deciding on a mark for the dish. If a dish is inedible because it is undercooked or overcooked, it should be given zero.
- Any dish planned but not served must also be given zero and those marks cannot be transferred to other dishes. Any dish prepared but which is not on the original plan made under examination conditions cannot be awarded a mark.
- All the work carried out in the Planning Session is marked externally, as stated in the Instructions to centres, but occasionally local Examiners have made comments on choice and have marked the Order of Work and the written answers.
- It was important that Examiners gave as much information as possible on each candidate's Method of Work in order to justify the mark awarded. Candidates who demonstrate few skills cannot score high method marks. In some centres, every candidate was given an exceptionally high method mark. To achieve high marks for the Method of Work candidates should be able to showcase at least seven or eight different skills.
- Hard copies of photographic evidence were provided in most cases. CD's are not acceptable.

### **Comments on specific questions**

#### **Question 1**

Many candidates made two sweet and two savoury dishes. Vegetables were used as fillings for quiches and pies and fruit was used to make cheesecakes, steamed fruit puddings and pies.

#### **Written answer**

(c) Most candidates stated that keeping food for longer was the main principle when preserving food. Few mentioned destroying bacteria. Many candidates discussed the advantages of preserving food, this was not a direct answer to the question.

Candidates were able to list four methods of preservation. These responses would be improved with specific examples of fruits and vegetables. For example, freezing was given as a method and then just the word vegetables was given as the answer.

Most candidates were able to give four reasons for the inclusion of NSP in the daily diet.

#### **Question 2**

Most candidates used four different types of protein. Soya was used to make a variety of dishes including soya gougere which showed the making of choux pastry. Eggs were used to make a cakes and quiches. Milk was used to make batters and cheese was used to make cheesecakes.



### Written Answer

(c) There seemed to be some confusion about the digestion of protein, although some candidates mentioned the correct enzymes. Most candidates mentioned that protein was eventually broken down into amino acids. Only a minority of candidates accurately described deamination. A few candidates mentioned the excretion of urea.

Most candidates discussed the differences between LBV and HBV protein as well as giving satisfactory accounts of protein complementation. A common incorrect answer was to give sources of HBV and LBV protein as examples of protein complementation.

### Question 3

Many candidates used parsley, tomatoes and lemon to decorate savoury dishes, whilst various fruits and piped buttercream/cream were used to decorate sweet dishes.

#### (b) Dish to show the use of carbon dioxide as a raising agent.

Many candidates made a yeast dough that was often used to make Pau or pizza. Some candidates made cakes and used flour to which baking powder was added. A few candidates failed to make an appropriate dish and made cakes using the whisking method for which they used plain flour. A small minority of candidates made choux pastry.

### Written Answer

(c) Candidates found this question challenging. Many candidates correctly mentioned colourings, preservatives and flavourings. However, responses often did not mention why they were used or just stated to 'add colour' for colouring instead of saying to make the food more visually appealing.

Good responses tended to be 'to improve the appearance of the food' and a few candidates replied 'to add nutritive value'.



# FOOD STUDIES

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**Paper 9336/03**  
**Coursework Investigation**

## **General comments**

### **Choice and justification**

The chosen area of study was appropriate in the majority of cases, and related directly to the syllabus. There were a few subjects that were only loosely linked to the syllabus, such as bottle and breast feeding, recall foods for safety and the benefits of growing your own fruits and vegetables.

The majority of titles were not investigations, but projects or studies. This could be improved by using command verbs in the title, which would change statements to investigations.

Reasons for the chosen area of study varied considerably. Though in many investigations the given reasons were detailed with good justification, in some investigations the given reasons were basic and superficial with little justification. Some reasons given were not directly relevant to the titles of the investigations.

Some candidates stated methods and resources to be used in the investigations as required, though most answers were not complete.

### **Planning**

The majority of investigations included one aim and 3 or 4 objectives, with very few sub-questions. Aims were sometimes a repeat of the main investigation title and where there were sub-questions they often repeated the main objectives. Some objectives included activities such as making leaflets and presenting talks, which were not a required part of the unsupervised work.

The plans of action varied from the very detailed to just a general overview of the topic. The best plans were detailed and included specific dates and tasks to be carried out and in a logical and workable order. The methodology was less well covered and was incomplete or omitted in a few investigations. Most candidates named 3 or 4 methods of research elsewhere in their studies. Candidates often omitted all or some of the details and could consider answering 'how, where, when and with whom'.

Some candidates stated how their findings were to be collated, though most candidates did not.

### **Theoretical research**

Almost all the candidates had devised and used a questionnaire in their research methodology. A good number of candidates made a considerable effort to interview experts in their chosen topics.

Some candidates had references throughout and research was clearly in their own words. Other candidates should be encouraged to write up their theoretical research in their own words or to reference any quotes correctly. Sources of diagrams and photographs were not always correctly credited.

Candidates should use a wider variety of sources for their research. There was a clear reliance on 'Wiki' in many studies and an insufficient use of diverse other sources, such as books, journals and newspaper articles.

All the investigations submitted were missing a succinct summary at the end of the theoretical research. Candidates should be encouraged to draw together all the information they have gathered into a summary.

## **Investigation skills and data handling**

The majority of candidates did not select enough investigative techniques, which limited the maximum number of marks available in this section. Five methods is the optimum for gaining possible maximum marks. Some candidates correctly linked the methods used to the stated aim and objectives, while in many others there was no correlation.

Evidence of pre-testing of research methods was minimal. Some candidates had stated it had been carried out but there was little evidence anywhere in the studies.

The quality of the methods used varied greatly. The interviews carried out were well prepared and responses were accurately recorded, however, in this section there was little evidence of analysis or of note taking. Questionnaires were generally well thought-out and gathered relevant information. Market surveys were less well done, often with pages of unreferenced photographs with no annotation or explanation as to how they were to be used. In the taste panels, there was often lots of photographic evidence of people trying the various dishes but insufficient analysis of the qualitative and quantitative data gathered. Nutritional analysis was probably the least well carried out method. Charts recorded recipe ingredients in amounts of 100 g rather than the actual amount used in the recipe, therefore giving incorrect data on the nutritional content of dishes.

Some candidates helpfully included brief comments under each graph used to record the data. Some candidates did not comment or annotate their graphs and charts at all. Responses could be expanded to include more analysis of the data. Many candidates had gathered sound data but did not reference it when they drew up their conclusions.

## **Evaluation**

Strong responses explained the strength and weaknesses of the methodology. Less developed responses were a self-evaluation of the candidates' skills and knowledge rather than of the investigation. Very few candidates referred to the plan of action and any reference to aims and objectives were often too brief. It is not enough to repeat the conclusion in this section.

## **Presentation**

Most investigations were attractively presented and were completed in a logical sequence. The appendix had been well used in all investigations. Some candidates used too many quotes that were not referenced and too much cutting and pasting, therefore losing marks for work not being in their own words. In some cases, the plan of action was in the wrong place.

Most of the investigations were within the word limit once the appendix, charts, photographs and quotes had been taken into consideration. Some candidates were well over the 4000 words limit and this could be improved. Perhaps candidates could edit out repetition to reduce the word count.