FOOD STUDIES

Paper 9336/01
Theory

Key messages

Questions 1 and **2**, which were mostly about macronutrients, were the most popular choices in ***Section A***.

Question 6 was the least favoured question, and when answered was not answered well.

In Question **3(a)** and **Question 2(e)(ii)** it is really important that candidates specify which part of the question they are responding to. For example, it is necessary to repeatedly state the stomach in order to gain all of the marks available for the stomach.

Very few candidates knew how to classify fruits correctly.

General comments

Success in this exam paper requires a detailed level of knowledge and understanding of the content of the specification, as well as the ability to apply that knowledge to different question types. For some areas of the specification, there was a lack of scientific knowledge.

Some candidates had difficulty applying knowledge to the questions.

Candidates should consider the number of marks available and plan their response accordingly.

There is a requirement to understand and meet the criteria that are set forth by the command verb.

Comments on specific questions

Section A

Question 1

(a) Most candidates were able to gain the mark for the liquid to solid point. Many candidates made reference to the nickel catalyst. Knowledge that one molecule of hydrogen is absorbed by each double bond was not seen.

(b) (i) Most candidates gave correct diagrams for cis and trans fatty acids. Where descriptions did not reference the double bond, responses did not show enough knowledge for the mark. For example, writing 'hydrogen attaches on the same side for cis and the opposite side for trans' is not detailed enough for a mark.

(ii) Many candidates scored two marks for knowing that the stabiliser prevents the emulsion from separating at a later date, and that it aids in spreadability.

(c) Examples like sunflower oil and olive oil were often identified as the EFA, and not as an example of an EFA. Omega 3 was often identified as an EFA. This was an incorrect response, but the error was carried forward, and a mark could be scored for writing 'Omega 3 from olive oil', the mark being for the olive oil.

(d) Many candidates were able to give key points but did not provide an explanation. When referring to rancidity, oxidative was rarely seen. There was a clear awareness of changes in taste, colour and aroma from degraded oil, but the use of scientific language was superficial.

(e) Most candidates knew that hypervitaminosis A is an excess intake of vitamin A, and that Vitamin A is stored in the liver. Few candidates were able to give two correct symptoms linked to excess intake. Vomiting was well known, but could not receive a mark without a second symptom.

(f) The functions of fat in the body were well known and responses were supported by useful explanations.

(g) Many candidates failed to gain the mark because of rounding up 3.75 kcal to 4 kcal. This is inaccurate.

Question 2

(a) (i) This question was rarely answered incorrectly as most candidates knew that glucose and fructose make up sucrose.

(ii) The majority of candidates were able to accurately draw a glucose molecule.

(iii) It was common to see responses that referred to the glycosidic bonding, and the short chain of 3- 10 monosaccharides.

(iv) Many candidates were able to identify raffinose as an oligosaccharide, but few candidates gave an example of a good source of the raffinose. Verbascose and stachyose were not seen.

(b) (i) The knowledge seen about sugar crystallisation and caramel making was inadequate. Sugar's ability to dissolve was rarely mentioned. An awareness that water evaporates during the process was seen and credited.

(ii) Almost all responses suggested that stirring would reduce crystallisation. This is incorrect. Candidates that suggested the addition of water, gave no indication of how much water would be required. Only a small amount of water would be necessary.

(c) (i) Oxalic acid and phytic acid were frequently seen correct responses.

(ii) A knowledge of haem and non haem iron was necessary to respond correctly to this question. This was rarely seen.

(d) (i) The definition required to answer this question correctly was that BMR is a measurement of calorific intake required to maintain body functions when the body is at rest. Many candidates did not provide this well known response.

(ii) It was necessary to identify that BMR increased or decreased according to certain factors. The use of the words increase and decrease needed to be used in each response. This was often not what was seen. Candidates were well versed in saying that age, body size, gender, climate and activity level could affect BMR, but did not say whether there was an increase or decrease, and did not say why there was an increase or decrease.

(e) (i) Few candidates accurately identified the specific causes of both PEMs (protein-energy malnutrition).

(ii) Many symptoms were given for both of the conditions. Symptoms given seemed arbitrary and were often inaccurate. Some candidates gave correct symptoms, but for the wrong condition. Some candidates gave correct symptoms, but did not state which condition they were referring to.

Question 3

(a) This question was reasonably well answered, with correctly identified enzymes being located in the correct organ of the digestive system. Many candidates were, however, unable to provide a logical sequence through the digestive system.

(b) It was very important to write clearly when responding to this question and make sure that letters in the words lactose and lactase were definable. Many candidates stated that the body did not make enough lactase to break down lactose in the diet. Fewer candidates stated that lactose breaks down into glucose and galactose. There was a tendency to describe the symptoms of lactose intolerance rather than explaining how lactose intolerance leads to defective absorption.

(c) Good knowledge was seen of the calcium content of milk. Candidates explained that calcium is needed for the formation and maintenance of strong bones and teeth and that in being lactose intolerant, people that avoid dairy food lack a good source of calcium in their diets, leading to osteoporosis.

(d) (i) Certain knowledge was not evident as candidates did not give two good food sources for all the named minerals.

(ii) Most candidates said that excess sodium can lead to hypertension. Many responses about fluoride incorrectly stated that an excess of fluoride would cause tooth decay. Common but incorrect symptoms like headache and weakness were seen.

(e) Polyphenol oxidase was often seen in the candidates' responses and there was good knowledge seen of the process of enzymic browning.

Question 4

(a) Many candidates confused dehydration with water balance. The serious consequences of dehydration were not seen in candidate responses.

(b) Often the first half of the equation was given correctly but not the second. Many candidates did not include energy in the second part of the equation.

(c) Many candidates were able to say that metabolic water is formed during cellular respiration. Fewer candidates stated that it is a by-product of the oxidation of energy containing molecules.

(d) Most candidates were able to score four out of six marks by saying alpha helix and beta pleated sheets and labelling two correct diagrams. Some candidates erroneously described fibrous and globular proteins.

(e) Most candidates who answered this question gained four marks for their good knowledge of how meat can be tenderised. Fewer candidates were able to give depth and detail to explain how the stated methods tenderised the meat.

(f) (i) This question was not well answered. Many candidates focussed on when and why deamination occurs, and on the formation of urea. Knowledge of the removal of an amino group from an amino acid was rarely seen.

(ii) There was little evidence that candidates were able to identify the differences between transamination and deamination. Descriptions were seen of both processes but not contrasts between the two processors as requested in the question.

(g) Candidates did not give the correct data for this question.

Section B

Question 5

(a) Full marks were often given for this question, when the method for making a smooth fresh tomato sauce was logical and achievable.

(b) Most candidates stated that cans should be stored in a cool dry place to minimise rusting and that cans should be kept out of sunlight. The correct reason for keeping cans out of sunlight was rarely given. Many students wrote that expiry dates should be checked and stock rotated, though explanations were missing. Blown cans do not explode, but indicate that an organism is respiring and producing waste gas that swells the can.

(c) A small number of candidates identified that both methods remove moisture from food. Many candidates did not compare and contrast points between the two methods.

(d) Many candidates showed good knowledge of both the advantages and disadvantages of GM foods.

(e) Good answers gave five well explained points about the functions of eggs in cakes. Many candidates did not evidence their scientific knowledge in their responses.

(f) Most candidates were able to give key points, covering religion, time available, the occasion, a person's age, and personal preferences. Detailed explanations were rarely seen.

Question 6

(a) Responses showed that few candidates were familiar with the cook chill process.

(b) Most candidates showed some knowledge of modified atmosphere packaging and were able to score one mark for knowing that gases in the packaging are adjusted.

(c) Some candidates had a sound knowledge of clostridium perfringens, and were able to state that it is a bacterium found in soil and raw meat, that it is a spore former. Other characteristics were not mentioned.

(d) (i) It was rare to see electromagnetic radiation being known or understood.

(ii) Most candidates did not answer this well, and made reference to the standing time being necessary to prevent the food from being too hot to eat. This is personal safety. Candidates did not explain how standing time promotes food safety.

(e) Most candidates made sensible suggestions, with an explanation, with common responses being about price, space, upright or chest, eco-friendly and energy efficient.

Question 7

(a) In this question, many candidates incorrectly wrote about the production of tofu. Some candidates knew that a fungus was used in the production of tempeh, but were not able to name it.

(b) (i) Most candidates showed some awareness of strong plain flour having a high gluten content that provides an elastic dough. This was the main point credited in the scripts seen. Candidates did not make reference to the sensory qualities provided by white flour when compared to flour with bran.

(ii) Most candidates did not apply scientific knowledge to the changes that happen to puff pastry. Many made reference instead to cakes or bread. Answers gave key points but candidates did not include further details to gain a further mark, for example, they were able to say that fat melts, but not explain the changes that this made to the pastry.

(iii) Candidates answered this question well, and most identified the saving of time and the reduced cost.

(c) To gain a mark in this question, it was necessary to make a point, provide an example for that point, and explain the point. Candidates often gave reasons for cooking food and included either a food example or an explanation, but rarely both.

(d) (i) Very few candidates accurately stated that the fridge, cooker and sink area make up the work triangle.

(ii) In this question it was necessary to qualify any points made in relation to personal safety, for example, if a candidate wrote that there should be a non-slip floor, it would be necessary to write to prevent trips and falls to gain the mark. This question was not about retrofitting the kitchen, or the placement of equipment; it was about the advanced planning of the kitchen for the personal safety of the users.

Question 8

(a) The question required the candidates to give an accurate definition of the different classes of fruits. Responses seen did not provide this.

(b) (i) A few candidates knew that pectin reduces blood cholesterol levels and slows down glucose absorption.

(ii) Most candidates did not provide the scientific knowledge and explanations to show understanding of how pectin functions in jam making.

(iii) Most candidates showed good knowledge that pectin sets yoghurt and stops separation.

(c) Few candidates showed that they knew the necessary temperatures and procedures needed to make yoghurt.

(d) Many candidates provided a combination of ethical and sustainable points. A wide range of knowledge on this topic was rarely seen.

(e) Most candidates evidenced that beta glucans can lower cholesterol and regulate blood sugar levels

(f) Most candidates answered this well, giving points with justification that often related to economy.

FOOD STUDIES

Paper 9336/02
Practical Test

General comments

Candidates generally made suitable choices to meet the demands of the allocated test, and the majority of candidates were able to demonstrate a good or wide range of skills across their menus. These included cheesecakes (using gelatine), batters (coating and pouring), yeast-based dishes such as Brioche and Pao, cakes made by the creaming method or whisking method, sauces made using the roux method, choux, rough puff and shortcrust pastry. Some candidates repeated the use of chicken and/or cheese, or roux or ragu-type sauces in several dishes, and this does reduce the level of skills shown, as preparation methods are similar. Recipes were generally well written, although a significant number of candidates struggled with their shopping lists.

Time plans were mostly well-structured and gave clear instructions on methods, cooking times and temperatures. The best candidates gave a logical sequence to their plan, with dishes requiring cooling or setting made earlier in the plan; and hot service dishes made towards the end. Each dish must be sensibly dovetailed, where candidates dovetail tasks so that while one dish is cooking, another is being prepared or decorated. Some candidates split up preparation of certain dishes, such as cake mixtures, or sauces into too many illogical chunks, which would have a negative impact on the mixture in practice; as well as making the plan extremely difficult to follow. For example, when making a whisked sponge cake it is important to whisk as much air as possible into eggs and sugar and then as soon as the raw mixture is aerated enough it is essential to carefully fold in the flour. It would not be appropriate to whisk the eggs and sugar until thick and creamy and then leave this mixture to stand while carrying out part of another recipe. This would result in a flat sponge as the air would not remain in the raw mixture. The time plan should be written concisely and in a way that another student at the same level could produce the same results using the instructions it contains. Candidates should be able to use no more than two sheets for this task.

Specific methods used to make dishes must be included and must also be named when a labour-saving device is used. For example, '*make shortcrust pastry using the **rubbing-in method** in the food processor*', '*make pouring batter by **blending all ingredients until smooth**, using a hand-blender*'. 'Pulsing in a food processor' is not a preparation or cooking method specified by the syllabus. Most candidates also used the correct terminology to describe different stages of a method. For example, when making yeast mixtures they referred correctly to 'kneading' and 'proving' the dough. In addition, candidates identified clearly when labour-saving equipment was used to make part of a dish.

Centres are reminded that the half-hour preparation is strictly to be used for processes that are **not** part of the preparation of dishes. This time should be used for preparation of bakeware, weighing of ingredients, sifting of flour or icing sugar, preparing herbs, fruits or vegetables for garnishes – but **not** chopping vegetables or fruit for inclusion in recipes.

The quality of the written answers varied. Most candidates seemed to have had enough time to complete all sections of the paper, although knowledge and ability to express themselves varied.

The section of written work requiring candidates to give practical reasons for their choice of dishes is an area that could be improved. Answers tended to be vague or formulaic, rather than highlighting specific skills used, such as: the Quiche is made using shortcrust pastry or the Gougère is made using choux pastry or the Victoria sandwich is made by the creaming method or all-in-one method and so on; or logical sequencing of dishes to maximise use of oven space, for example. Where candidates refer to seasonal or home-grown ingredients, or cheaper cuts of meat or types of fish; they must give relevant examples from their recipes and elaborate on their statements. If they cite the use of labour-saving equipment, this should be named, and they should specify the process for which it has been used. Candidates should be reminded that they are aiming to demonstrate a high level of skills and citing the reasons for choice of dishes because they are 'easy to make', defeats that object.

Candidates are asked to comment on the nutritional value of the dish chosen in **part (b)** of the question. There were some excellent accounts, giving the source (ingredient) of the specified nutrient and its function in the body. Several candidates also provided nutritional data tables for this section, then linked the nutrients to function. This is good practice for Advanced Level.

Key messages

Teachers who undertake the marking of the Practical Test are reminded that the mark scheme published by CIE must be followed accurately. 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. Most centres complied with this rule, but there are still some centres who award high marks for very simple 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 complexity, or otherwise, of the dish. Teachers should avoid using half marks, as this can lead to over-marking.

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.

It is important that examiners give 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. To achieve high marks for the Method of Work candidates should be able to showcase at least seven or eight different skills. **Marks awarded in this section also need to reflect the evidence for results**.

Comments on individual questions

Question 1

This was a popular question. Most candidates chose suitable dishes for the identified cooking methods and in most cases the dishes chosen were skilled. Sponge Cakes and Gougère were popular for baking, Steamed Pao and Steamed Sponge Pudding for steaming, Stuffed Pancakes for frying and Lasagne for grilling.

Methods were mainly used correctly, although it often appeared that dishes requiring 'grilling' were being oven-baked. By definition, grilling is a quick cooking method that uses a heat source either below or above the food being cooked, where heat transfers to the food by radiation. It can be used to 'finish' certain dishes by browning; however, dishes such as 'cannelloni' or lasagne that were prepared early in the test could not have been heated thoroughly by this method without burning the top surface.

Written answer

Very few candidates were able to identify and explain five safety points when deep fat frying. Common correct answers gave reasons such as not over-heating the oil to avoid it catching fire, making sure the equipment and the food is dry to prevent spluttering, and turning the pan handle inwards so that the pan is not knocked accidentally. Some candidates mentioned keeping a lid nearby to cover the pan if it caught fire and some stated that the pan must not be left unattended. Candidates did not always explain the points they identified or include specific examples to illustrate the point they had made. For example, some candidates mentioned that the correct equipment should be used when removing food from the pan, but they did not give an example of what that equipment might be (such as a slotted spoon or tongs made of metal).

Very few candidates were able to list five points in which energy can be conserved when boiling vegetables. Correct responses mentioned boiling two vegetables together in a pan but did not give an example of which vegetables (such as carrots and peas) could be boiled together. Some mentioned keeping the lid on the pan to save heat and cutting the vegetables into small pieces to save cooking time. Others mentioned using a small amount of water that would heat up quickly.

Candidates could also have included reducing the size of flames and using flat based pans made from materials that were good conductors of heat e.g., copper.

Some candidates gave answers such as use a different method of cooking (stir frying for example). This was not relevant as the question was about boiling vegetables.

Question 2

Most candidates remembered to name the specific herbs or spices they were using in the choice section. The best candidates used these as integral features of their dishes, rather than a simple garnish. A range of savoury and sweet dishes were chosen.

Written Answer

Few candidates could accurately explain the technical difference between herbs (the leafy or stem parts of a plant) and spices (the root, bark or seeds), although several were able to give a good account of a bouquet garni.

Most candidates were able to give three ways to reduce vitamin C loss when preparing and cooking cabbage. Candidates set out their answers under the headings ‘preparing’ and ‘cooking’ which helped them to give clearly defined answers for each term. Correct answers for ‘preparing’ included tearing the cabbage instead of cutting it, not shredding the cabbage too thinly and avoiding soaking the cabbage before cooking. Correct answers for ‘cooking’ included only using a small amount of water, keeping a lid on the pan, using the cooking liquid in sauces and using alternative cooking methods that retained vitamin C such as steaming, stir frying and microwaving.

Question 3

Many candidates correctly used the named preserved food in their chosen dishes. Fish Gougère and Stuffed Pancakes were popular choices to show the use of frozen fish. Cheesecake using canned pineapple or peaches was a popular choice to show the use of a canned fruit. Swiss Roll and Sponge Cake were common choices for showing the use of Jam. Lasagne and Spaghetti with Meatballs were chosen for showing the use of dried pasta.

Some candidates made unsuitable choices as they misunderstood the purpose of the question which was to show the use of the named preserved foods. Instead, they made their own version of jam (such as strawberry coulis) or they used fresh fruit such as strawberries instead of canned fruit. A few used canned tuna or fresh fish instead of frozen.

Written Answer

Many were able to explain the principles of the listed preserving methods and related their responses to reducing the risk of food spoilage and contamination. A few gave instructions for the processes instead. Most gave relevant reasons for the preservation of food. The first part of this question required candidates to explain how freezing, canning and jam making worked therefore demonstrating a sound understanding of the principles underlying preservation. Many of the responses to this part of the question were vague or

repetitive. Candidates were not always clear about the effects of cold, heat, lack of moisture and high sugar concentrations on microorganisms/bacteria. Instead, candidates wrote at length about the process of freezing, canning or drying food giving examples of foods that can be successfully preserved in this way.

The second part of the question required candidates to list six reasons for preserving food. Most candidates were able to suggest at least three or four correct reasons showing their understanding of the advantages of preservation. The most common responses included: food can be kept safe for longer, food is available for use in emergencies, seasonal foods can be preserved and used at different times thus ensuring a varied diet and food wastage is reduced or prevented.

Dish using shortcrust pastry

Most candidates made a fruit or a savoury tart. There were also some good examples of Bakewell tarts. A few candidates referred to the filling for the Bakewell as a 'melting method' mixture. This mixture should be made using the creaming method. A number of candidates also planned to blind bake the case for this, but the correct method is to bake the case and filling together as one.

Candidates generally remembered to cite the rubbing-in method for the pastry, and accurately described the process for this in their time plan.

FOOD STUDIES

Paper 9336/03
Unsupervised Work

Key messages

- Check the syllabus carefully to ensure topics are covered.
- Check the word count as many are over the limit.
- Check the guidance and mark scheme as many candidates are missing out on marks because they do not use enough methods of investigation.
- Please do not print onto card as the work becomes too bulky and difficult to handle and mark. Printing on both sides of the paper is preferable as it is saves paper and is cheaper for transporting.
- Section dividers are not necessary as they also add to the bulk. Just a clear heading at the top of the page to indicate a new section is sufficient.

General comments

- Some of the titles were not written as investigations, but as statements. Candidates should be framing their titles as a question such as 'How far is it possible..'.
- There were some comparative studies this year, which is not what is asked for. They should be investigations.
- The Brunei centres made a great effort to print double sided and to stick to the word limit this year, which made for a more focused and succinct investigation. Thank you.
- There were fewer science-based investigations this year compared with last year, and the topics tended to be the familiar diabetes, CHD, fruits and vegetables, etc.
- There were some topics selected that were not covered by the syllabus, such as lemongrass, fast foods, fruit and vegetables in lockdown, melanoidins in coffee.
- The choice and justification of the titles was weak in some cases, with reasons for choice being framed as statements.
- Candidates were able to identify the methods to be used but were less likely to include what resources would be used in their studies.
- Some candidates did not plan enough methods of investigation and therefore it affected their maximum marks available throughout the coursework. When only three or four methods are used it affects not only the marks available in the 'investigation' section, but also in the 'conclusion' and 'evaluation' sections.
- The best 'plans of action' contained dates, methodologies to be used, resources and with whom, all in one table. The 'diary of activities' often repeated information in the plan of action. This just added to the word count.
- The majority of candidates from the Brunei centres produced comprehensive plans of action.
- Planning more often than not only included one aim and, on average, four or five objectives. It was rare to see any sub questions generated by the aims, although more candidates were linking objectives directly to their methodology.
- Some dates were very vague, e.g. April-May, rather than being specific. Some candidates had not taken into account school examinations when planning their dates and therefore were often not able to adhere to their plans.
- Some activities were not investigations, such as measuring BMI. BMI should be avoided as a measurement of obesity as it is not reliable.

- Some candidates used some of their valuable word count discussing the advantages and disadvantages of the various research methods rather than actually planning them.
- Some of the word count was also used up by including charts and food diaries in the main body of the work rather than in the appendices.
- Some candidates are still using Wikipedia for research, which is an unreliable source, although there are fewer doing this than in previous years.
- Candidates need to be careful when using data from other countries as it may not be relevant to their locality.
- There is still some 'cut and paste' evident in some of the research. There was also some evidence of AI this year in a few cases.
- The majority of the research carried out was relevant to the topic. The research section generally was lacking a summary of the findings.
- Some annotation was missing from where it was needed to explain tables and photographs included in the research.
- A summary of the research section was still missing from the majority of pieces of coursework.
- Investigation methods were sometimes confused, e.g. where a visit had taken place but an interview recorded.
- Some investigations did not have any results presented and therefore could not be awarded high marks as there was little evidence of the work being carried out.
- Some candidates were confusing the 'ethnic' and the 'religious' groups especially in their questionnaire results.
- Candidates were awarded high marks when they used their collected data in the conclusions, however, there are still candidates who are not using their data to advantage by using it to support their findings.
- Recommendations were often not focused on their findings but on how they might improve their investigations if they were to do it again.
- Any reference to the aims and objectives were often omitted from the evaluation of their investigations and candidates used this section, more often than not, to self-evaluate.
- As mentioned above, many candidates did not adhere to the work count limit. It was not uncommon to see the Mauritius candidates more likely to be in excess of 4,000 words, and the candidates from Brunei closer to the limit. Some pieces of work were in excess of 10,000 and two were over 12,000 words long. Candidates need to be more aware of the limit and the fact that they do not gain any extra marks for the extra work, and in fact lose some.