

FOOD STUDIES

Paper 9336/01
Theory

Key messages

Candidates attempted the full range of questions, with **Questions 2 and 3** being the most popular in **Section A** and **Questions 7 and 8** being the most popular in **Section B**.

Candidates left very few parts of questions unanswered; there were attempts to write an answer, which is pleasing to see.

General comments

Success in this exam paper requires a detailed level of knowledge and understanding of the content of the specification, at a level that differs to that of O Level.

Application of knowledge and concepts is necessary, and with A Level candidates, there is an expectation that cognition plays a part in skilful responses to some of the more challenging questions.

For some areas of the specification, there was a lack of scientific knowledge, and some candidates had difficulty applying knowledge to the questions.

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

Comments on specific questions

Section A

Question 1

- (a) Few candidates were able to show knowledge of the role of calcium in the contraction of the heart muscle. Inaccuracy was shown by some candidates who gave answers like 'calcium regulates the heartbeat', or 'calcium makes the heart pump blood.' Many candidates failed to score on this question.
- (b)(i) Candidates were able to suggest a very wide range of nutrients that can be found in chicken breast meat, and were required to give a function in the body for each suggested nutrient. Candidates were expected to have the knowledge that chicken breast contains high biological value protein and fat low in saturates.
- (ii) Only a handful of candidates showed knowledge of sodium being used in chicken meat to plump up chicken. Most candidates wrote that sodium is put into chicken breast meat to extend the shelf life of the chicken.
- (c) Some candidates showed knowledge of haemoglobin being an example of a molecule with a prosthetic group, and were able to say that the prosthetic group is a non protein. Stronger responses stated that the prosthetic group is bound to a polypeptide.
- (d)(i) This question was often well answered, with some very good diagrams seen. Diagrams varied in quality, though most candidates could label the lacteal, the capillaries and draw a clear diagram showing these parts. It was rare to see microvilli labelled.

- (ii) A wide awareness of the villi providing a large surface area was seen. Strong responses emphasised that the large surface area increases the rate or efficiency of absorption.
- (e) Few candidates showed an awareness that coeliac disease is the result of an autoimmune response, triggered by gliadin from wheat. Candidates were unable to gain marks unless they were able to state that a damaged intestine resulted in poor absorption of all nutrients, which brings about poor growth in children. Most candidates knew that growth was reduced but could not explain why.
- (f) (i) A strong knowledge of protein foods and functions, and of fruits, would have allowed a candidate to work out that the acid in the fruits would bring about coagulation of the cream. The word curdle was acceptable, but was rarely seen used as a description of what had happened to the cream that had been poured onto the fruit.
 - (ii) Storing cream in the fridge would not prevent the curdling of the cream that had acidic fruit in it, yet this was often seen as a response to this question. A minority of candidates recognised that keeping the cream separate from the fruit until the point of eating would be the preferred way to serve the dessert.

Question 2

- (a) Many candidates scored two marks for identifying that methionine is an essential amino acid and as such is needed for growth. Stronger responses stated that essential amino acids need to be taken in as food, as the body cannot synthesise them. It could be seen that protein complementation was understood in general terms, but was not linked to methionine in cheese, so rarely were marks awarded. An example of that is where reference to complementary proteins like beans on toast was made, but not to pairing the cheese lacking in methionine with another food containing methionine.
- (b) Normal bacteria in the gut would have been a good response for one mark, but this was rarely seen. Candidates did not identify that the enzymes metabolise dietary fibre.
- (c) (i) The majority of candidates were able to identify cobalt.
 - (ii) Good knowledge of food sources of cobalt was not seen. Liver and red meat were common responses. Some candidates identified two leafy green vegetables, but this could only be credited as one source.
- (d) Good knowledge of fats should have allowed candidates to explain how fats decompose. Candidates with less secure knowledge of fats began by describing the structure of different types of fats before moving on to explaining the causes of decomposition, which was unnecessary and time-consuming. Good knowledge of hydrolytic rancidity was seen, with links to moisture and lipases seen. The majority of candidates did not identify that it is unsaturated fats that become rancid through oxidation, so could not get the mark for oxidative rancidity. There was good knowledge that fats are broken down into fatty acids and glycerol when high heat is applied.
- (e) It was necessary to state that deamination takes place when the body receives excess protein. Stronger responses stated the amine group of the amino acid is removed in the process of deamination, though few candidates showed an awareness that deamination prevents toxicity of the kidney and liver.
- (f) (i) Many candidates correctly identified blood clotting as a function of vitamin K. This allowed candidates to access one mark, but many did not identify a second viable function for vitamin K.
 - (ii) To be awarded the mark, it was necessary to state that vitamin E is an antioxidant of polyunsaturated fatty acids, vitamin A or vitamin C. Most candidates scored one mark for this question for stating that vitamin E's functions are to maintain healthy hair, healthy skin prevent cancers and coronary heart disease.
 - (iii) Most candidates showed an awareness that there would be a reduction of sunlight hours in the Northern hemisphere, and some went on to say that the reduction in sunlight hours would reduce the number of UV rays reaching the skin. Several candidates suggested that vitamin D is made by

the sun and transferred to the skin, rather than the skin synthesising vitamin D from the action of UV rays.

Question 3

- (a) It was necessary to state that sugar or starches are processed during refinement. Several candidates gained a mark for stating that bran is removed from a grain, and gave examples of white flour and white rice.
- (b) Many candidates identified rennin and not pepsin as the enzyme responsible for digestion in the stomach. Where candidates stated pepsin this was usually linked to casein, so two marks could be awarded.
- (c) (i) Very few candidates gave the response of antioxidant, or assists in proper thyroid function/metabolism.
- (ii) This question was not well answered, with few candidates being able to identify two good sources of selenium.
- (d) Few candidates knew that metabolic water is produced in the body's cells. Accuracy was needed to be awarded the marks; it was not enough to say 'in the body.' Some answers stated that metabolic water is made in the stomach, from digestion and from respiration.
- (e) It was necessary to ensure that the nutritional profile discussed pertained to teenagers, and not to all people. Good attempts linked protein to rapid growth, iron to girls menstruating, and vitamin C for increased iron absorption from menstruation. Eating fresh fruits and vegetables to improve teenagers' skin was often seen.
- (f) Candidates that were able to identify an oligosaccharide often showed a good knowledge of the uses of the oligosaccharide, and scored full marks.
- (g) There was a tendency for candidates to describe the hydrogenation process rather than give the benefits of it. The most common benefit credited was that the oil becomes spreadable, and many candidates identified the resistance to rancidity, giving improved shelf life.

Question 4

- (a) (i) Few candidates gave the response that serum cholesterol is a measure of the amount of cholesterol in the blood.
- (ii) As a type of fat, candidates were expected to be able to describe its structure and appearance. Many candidates correctly stated that it is white and waxy or fatty, but few candidates stated its functions in the body. Candidates rarely showed an awareness that cholesterol has positive functions in the body, but regularly stated the dangers linking it to CHD and strokes.
- (b) Many candidates identified the need for pectin and heated sugar to make good jam. Some candidates also recognised the requirement for a low pH value for a good set, and mentioned the addition of lemon juice to bring this about. Some candidates mentioned adding lemon juice but thought that it was needed for flavour. The word gel was rarely seen.
- (c) There was credit given to candidates who commented on the amount of nutrients provided by a food product. Some candidates showed knowledge of deficiencies, obesity and the importance of DRV in supporting healthy eating practices.
- (d) (i) This question was well answered with most candidates knowing that it was vitamin C.
- (ii) This question was well answered, with candidates often giving oedema, bleeding gums, wrinkled skin, and wounds healing slowly as their responses.
- (e) (i) There was little evidence of the candidates having good knowledge of the term reducing sugar.
- (ii) This question was well answered with most candidate being able to give another example of a reducing sugar.

- (iii) Many candidates were able to draw a recognisable diagram to represent $C_6H_{12}O_6$. Often one mark was awarded because of a small inaccuracy.
- (f) Many candidates showed knowledge that one twin might carry out more activity, but did not go on to explain that their demand for a higher intake of calories would be needed. Several answers referred to the identical twins being of different genders, evidencing that some candidates were unsure of what identical means.

Section B

Question 5

- (a) To score well in this question, candidates needed to identify that plant cells contain a large amount of water in their cells, and that this cellular water can distort the shape of the cell on thawing. For this reason, ice crystals that form quickly and are small cause less cellular destruction, and ice crystals that form slowly are large and cause greater cellular distortion. Many candidates chose not to focus on the rate of freezing, and as a result the creditable points on the mark scheme were not given.
- (b) Most candidates identified vinegar, and knew that this prevented microbial activity.
- (c) (i)(ii)(iii) This question required a type of microorganism to be identified, but not examples/names of different microorganisms.
- (d) (i) This was a well answered question, with candidates scoring marks for naming the Maillard reaction and dextrinisation most often. Caramelisation was also seen, though much less often. Details of how the browning occurred varied in detail.
- (ii) This was well answered with candidates referencing an attractive brown colour to entice the consumer.
- (e) As this question required two correct points to score one mark, candidates often scored two marks for stating that users should read the instructions, not plug in with wet hands, handle the blade with care, and not overfill the bowl. There were many other points that were not considered.

Question 6

- (a) (i) This question was very well answered, with most candidates stating bacillus cereus and clostridium botulinum.
- (ii) There was evidence of good knowledge of the term anaerobic. Few candidates were able to explain that spores contain the genetic material needed to produce new bacteria when the conditions are favourable.
- (iii) Accuracy of knowledge was necessary to score in this question, and therefore the word exotoxins was required. Candidates who gave the symptoms of food poisoning did not score as that was not a description of toxic food poisoning.
- (b) Most candidates were not able to show if they had knowledge of 63°C being the hot holding temperature for hot foods, because of it being at the top end of the danger zone.
- (c) (i) Most candidates were able to state that sulfur dioxide is a preservative.
- (ii) A strong response would have been one that categorised additives as ones that provide sensory characteristics, ones that add nutrition, ones that aid manufacture, and ones that extend shelf life. One example of each of these, with a reason for their use would have scored well.
- With disadvantages, the possibility of an allergic response was the most frequently seen response, but there was often no expansion about the dangers that this could cause.
- (d) Logical methods for the making of a hard cheese were often seen, and cheddar was seen to be a well-known hard cheese.

Question 7

- (a) (i)(ii)(iii)(iv) Good knowledge of suitable cooking temperatures for a variety of food products was sometimes seen, though many candidates did not give a low enough oven temperature for the drying of meringues, or a hot enough temperature for the deep frying of potatoes. The correct temperature for the baking of the Victoria sandwich cake was best known.
- (b) (i) A full and strong answer would have included mention of the movement of the milk through various stages of the food chain. Reference to the origin of the milk and the possibility for contamination and cross contamination throughout the milk's journey. Many candidates wrote about cross contamination and scored one mark, and some stated that the milk may not have been pasteurised.
- (c) Candidates showed a lack of knowledge about blended sauces, with almost all candidates reference to using a blender to break up lumps in the sauce. A good response would have identified that a blended sauce requires cornflour/cornstarch or arrowroot powder, to be suspended in a small amount of cold liquid before being added a larger volume of heated liquid before being brought to the boil to gelatinise.
- (d) This question was very well answered and a range of good knowledge was seen. Strong answers included reference to bigger yields, larger products, higher nutritive value, more resistance to pests, and more tolerance to climate changes.
- (e) To answer this question well, candidates needed to consider different foodstuffs, how they are packaged, and their vulnerability in transport. It was not enough to say 'things could get crushed', or 'things could get wet', without stating what sort of items would suffer different consequences. Eggs need soft, separate cups to store them safely, and can be placed in cup trays that are designed to stack on top of one another to minimise movement. Glass jars of coffee or pickles can smash, and therefore need packing closely in secondary containers or boxes that will prevent their movement during transportation. Candidates found it difficult to differentiate between deterioration and damage. Discussing road conditions and the time for transportation did not answer the question.

Question 8

- (a) Most candidates showed some knowledge of why chicken needs to be thoroughly thawed before roasting. Most candidates scored one or two marks for identifying that there would be ice crystals left in the bird, a longer cooking time needed, and that pathogens may not be killed and may begin to reproduce during the cooking process.
- (b) (i) Many candidates incorrectly stated flaky pastry and filo pastry and did not get the mark. Few candidates correctly identified flaky pastry and choux pastry.
- (c) Recognition that people on a low income need to budget their finances scored a mark. Many candidates recognised that buying fruit and vegetables in season led to lower prices, but candidates didn't always explain their points, which led to no marks being awarded. An example of this is where a candidate would write that people should buy cheaper cuts of meat, but not explain that they are cheaper because they are tougher and need moist cooking methods, like buying stewing steak instead of frying steak. Some candidates suggested that soya could be bought instead of meat because it is cheaper than meat, but this is not necessarily true of soya products, which can be expensive because of their processing methods. There were no marks for discussing the nutritional problems that low-income families may encounter.
- (d) Recognition that U shaped, L shaped and parallel kitchen shapes lead to efficient working practices scored a mark, but that link to efficiency had to be made to score the mark. Many candidates identified the kitchen triangle, but could only score a mark if the fridge, cooker and sink were identified as making up that triangle. A limited number of candidates showed awareness that worktops and cupboards should be at the correct height to prevent strain injuries. Responses that did not score well were those that discussed the choice of flooring, worktops, lighting and colour schemes, instead of the planning for and positioning of units, steps and large appliances.

- (e) Candidates of all abilities showed some knowledge of both the advantages and disadvantages of importing foods. Responses were often organised into two sections, with one covering advantages and the other disadvantages. Some common discussion points were the variety of foods available, revenue for the exporting country, economic ties, continuous availability, seasonal foods throughout the year, a rise in costs due to transportation, an increase in greenhouse gases due to transportation, reliance on other countries, a decline in demand for locally produced products, a loss of local jobs, and uncertainty of food hygiene practices of the importing countries. In order to score marks, candidates had to give an explained point.

FOOD STUDIES

Paper 9336/02
Practical Test

Key messages

Teachers should not award half marks when assessing the method of working and practical work.

General comments

Candidates generally chose skilful dishes and demonstrated a range of skills during their practical test. These included cheesecakes (using gelatine), batters (coating and pouring), yeast-based dishes such as Pao and Brioche; cakes made by the creaming method or whisking method; sauces made using the roux method; choux, rough puff and shortcrust pastry. There was evidence of good use of labour-saving equipment such as food processors, electric whisk, blender and microwave. Candidates also demonstrated skills such as piping and shaping and there were some beautifully decorated cakes and cheesecakes.

The quality of the written answers was mixed. Scripts were set out clearly and candidates seemed to have had enough time to complete all sections of the paper. Some candidates were able to answer all the questions showing their knowledge of the different topics. Others missed out questions or gave answers that were lacking in detail and explanation.

Preparation Time

Some candidates listed an appropriate amount of work to be carried out in the half-hour preparation time before the start of the Practical Test while others included processes that are part of the preparation of dishes. For example, some candidates were preparing vegetables or fruit (other than those being used for garnishes), preparing yeast mixtures, and dissolving gelatine during the preparation time. Marks are reduced when this occurs.

Time plans

Most candidates were able to demonstrate their ability to sequence the dishes made in such a way that they were able to serve hot dishes hot as well as allow time to chill dishes that were to be served cold. There was some good evidence of dovetailing whereby candidates showed their ability to use time efficiently by interlocking processes and methods in the planning of their dishes.

In a few cases, candidates swapped between recipes more than they needed to (possibly to try to show dovetailing) but this made the plan unworkable and would affect the quality of the dishes being made. 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.

Methods were generally accurate. Most candidates made accurate use of abbreviated methods where appropriate in their planning. These included using terms such as 'rubbing in method', 'creaming method/whisking method' and 'roux method'. 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.

Most candidates stated accurate oven temperatures and cooking times for each baked dish even when the oven temperature remained the same for several or all baked dishes.

Generally, candidates remembered to include chilling times as well as where they would put the dish to cool it. Only a few candidates mentioned heat levels when cooking food on the hob or under the grill.

Reasons for Choice

The section of written work requiring candidates to give practical reasons for their choice of dishes was not answered as well as it could be.

Responses tended to be generic and vague with little explanation as to how a particular dish fulfilled the reason given. For example, when suggesting that a dish was inexpensive to make candidates should show the depth of their knowledge by identifying the ingredients that contributed to this. Very few candidates mentioned the skills that they were able to demonstrate in the dishes chosen.

Marks were awarded for well thought out responses which demonstrated clear and accurate knowledge relating to the dish identified as well as listing specific skills that the candidate had used when preparing their dishes. For example, when mentioning the availability of ingredients (including seasonal and home-grown) candidates should identify which ingredients are readily available and which ones they had at home in the store cupboard or freezer. When commenting on seasonality and the use of produce that is home-grown candidates should state which specific ingredients (e.g. which fruit and which vegetables) are in season and which ones they have grown in the garden. When mentioning the cost of ingredients candidates should be able to identify which ingredients are inexpensive e.g. chicken thighs may be cheaper than chicken breast.

Candidates should also identify the skills that they are using e.g. the quiche is made using shortcrust pastry or the gougère is made using choux pastry or the sponge cake is Victoria made by the creaming method or all-in-one method and so on. Finally, candidates should mention that they have demonstrated skills in using labour-saving equipment (such as a food processor or an electric whisk) and which specific part of the recipe or ingredient the equipment was used for.

Candidates do not need to make comments about the type of meal for which a dish would be suitable or how a dish might be adapted to suit different individuals or how it could be made in advance and frozen for future use or used for a birthday party or taken on a picnic. These are not practical reasons for choice.

Candidates should be discouraged from stating that a dish was easy to make or didn't require much skill – all dishes should be skilful.

Nutritional Value of Dish Chosen for part (b)

Candidates were asked to comment on the nutritional value of the dish chosen in **part (b)** of the question. This was answered well. Candidates were able to give precise information and to accurately identify specific ingredients, nutrients and functions all relating to the dish chosen for **part (b)**.

It should be noted that nutrients must be linked to ingredients and to functions. It is not enough to state that the dish contains iron or protein etc. Candidates must state functions of the nutrients to be awarded marks. Some candidates calculate 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.

Comments on specific questions

Question 1

This was a popular question. Most candidates chose suitable and skilled dishes for the ingredients specified in the question. These included beef brioche, beef gougère and beef pizza roll for the ingredient beef. Quiche, sponge cakes and gougère were popular choices for showing the use of eggs. Sponge cake or cheesecake with dried fruit were popular for showing the use of dried fruit. Sponge cake with chocolate ganache and dark chocolate cheesecake were popular choices for dark chocolate and spinach quiche and spinach roulade were popular choices for a green leafy vegetable.

Written answer

Responses to this question were varied. Some candidates were able to identify four micronutrients that may be lacking in a vegan diet along with examples of good food sources. Others only identified two correct

micronutrients, or they identified macro-nutrients such as protein (possibly due to not reading the question carefully) which was incorrect.

A good number of candidates were able to list and explain the reasons why some people choose a vegetarian diet. The correct reasons included:

- Animal products may be more expensive than plant products
- Belief that a vegetarian diet is healthier e.g. animal fat is saturated/contains cholesterol/can lead to CHD/lacks dietary fibre
- Dislike flavour/texture/smell of animal flesh
- Family upbringing/tradition/custom
- Green issues e.g. methane from cows
- Health scares e.g. bird flu/BSE/salmonella from eggs/chickens
- Moral reasons e.g. object to slaughter/rearing of animals
- Peer pressure/follow trends
- Uneconomical use of land e.g. expensive to rear animals/more crops could be grown if land was used for cereals/more people could be fed from the same area of land.

Some candidates did not explain the reasons listed or include specific examples to illustrate the point they had made. For example, some candidates mentioned that people believe that a vegetarian diet is healthier, but they did not elaborate on this by mentioning that animal fat is high in cholesterol. Others mentioned 'green issues' but did not explain this.

Question 2

This was the least popular question.

Most candidates chose suitable dishes to demonstrate the processes listed in the question. The most popular choices for whisking were cheesecake (using whipped cream) and whisked sponge cake. The most popular choices for choux pastry making were gougère, eclairs and choux cuns. For batter making the most popular choice was stuffed pancakes and for bread making candidates chose apple tea ring, cinnamon rolls, pizza roll and brioche.

Some candidates chose a sponge cake using the creaming method to show whisking. This was an incorrect choice as butter or margarine and sugar are creamed together using a paddle attachment or flat beater (if using a mixer) or a wooden spoon (if by hand).

Written Answer

Only a few candidates were able to list six changes that take place when bread is baked. Answers tended to focus on describing how warmth and sugar leads to fermentation which helps the bread dough to rise, as well as describing dextrinization and the Maillard reaction. Other changes were missed out. Correct answers should have included:

- Warmth and sugar encourage fermentation; during fermentation maltase converts maltose to glucose.
- invertase converts sucrose to fructose and glucose.
- zymase converts glucose and fructose to CO₂ and ethanol; carbon dioxide expands and makes the bread rise.
- gluten stretches and coagulates at 70°C and forms the framework of the bread.
- liquid changes to steam and alcohol/ethanol evaporates.
- heat kills the yeast at about 55°C.
- starch gelatinises due to moist heat on starch; crust forms and browns due to dextrinisation of starch.

A good number of candidates were able to explain the functions of caster sugar and self-raising flour when making a whisked sponge. Most could explain that caster sugar is used to sweeten the cake and it then caramelises causing browning. Candidates were also able to explain that self-raising flour contains baking powder which acts as a raising agent and gluten in the flour forms the framework (or gives structure) to the cake and as it sets on heating.

Other explanations could have included:

CASTER SUGAR

- helps to trap air when whisked with the eggs; lightens texture.
- adds moisture as sugar liquefies on heating.
- provides carbohydrate/energy

SELF-RAISING FLOUR

- adds bulk.
- provides starch/carbohydrate/energy.
- traps air during sieving which helps the cake to rise.
- dextrinisation of the surface during baking/dry heat on starch/browns.

Question 3

This was a popular question. Candidates answered the question well and chose suitable and skilled dishes for the identified equipment.

Quiche was most popular choice for grater and rolling pin. Sponge cake and cheesecake were popular for showing the use of a whisk, pastry dishes such as quiche and vol au vents were chosen to show the use of a rolling pin and steamed pao and steamed sponge pudding for a steamer. Cheesecake was chosen for using the microwave – with a fruit topping being cooked in the microwave.

Candidates need to ensure that they refer to the chosen method in their time plans when they describe the making of each dish. For example, where cheesecake was chosen to show the use of the microwave the candidate is expected to state in the time plan that they will use the microwave when cooking the fruit topping. Occasionally candidates said the dish used the microwave but there was no evidence of this in the time plan. Where this occurred, the dish was assessed as unsuitable.

Dish to show conduction

All the candidates correctly chose and made a skilled dish which showed the use of conduction.

Some chose dishes that used both the hob and oven while others chose dishes that were baked in baking tins (for conductors of heat) in the oven.

Written Answer

The first part of this question required candidates to explain list four rules when rolling out shortcrust pastry. Several candidates mis-read the question and gave answers relating to how to make shortcrust pastry successfully. The candidates who answered the question correctly were able to state rules such as:

- Do not turn the pastry over.
- Roll pastry in one direction.
- Turn the pastry round for even rolling.
- Do not over handle the dough.
- Do not use too much flour for dredging.
- Use short, forward strokes and light even pressure.
- Do not stretch the pastry.
- Avoid re-rolling/do not roll too many times.
- Roll to an even thickness

The second part of the question required candidates to list six points to consider when buying a new microwave. Most candidates were able to suggest at least three or four correct points. The most common responses included:

- Choose a good brand
- Check how much space there is in the kitchen
- Choose a colour to complement the kitchen.
- Consider budget/cost
- Look for different features i.e. defrosting, combi etc.
- Ask for advice/reviews from friends/family/media.

Other correct responses could have been:

- Size of the family.
- How much space in the kitchen.
- Whether to have integrated or stand alone.
- Type of controls - digital or manual.
- Power output/energy rating.
- Warranty.
- Ease of use.

FOOD STUDIES

Paper 9336/03
Unsupervised Work

Key messages

- Check the syllabus carefully to ensure topics are covered.
- Check the word count as many candidates ignored it. Despite the word limit being 4500 plus or minus 10 per cent one study was 16 700 words, which was far too many, and one was 1555, which was too short. Ideally studies should have a word count of between 4050 and 4950. No marks are credited past the first 4500 (+10%) words and so candidates that go over the word limit often miss out on marks.
- It appears that some candidates are including the appendices, charts and graphs in their words count. Check page 22 in the syllabus for confirmation.
- 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 saves paper and is cheaper for transporting. Just putting a few lines on a sheet of paper is not economic. In several studies a few pages could have been condensed down.
- 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.
- Proof reading is very important. One candidate reprinted five pages of results while other were missing.
- Check pages are in the correct order.

General comments

- The majority of candidates are still not writing the titles of their studies as investigations, but are writing them as statements. Candidates should be framing their titles as a question such as 'How far is it possible.....'.
- 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 less science-based investigations this year than last year, and the topics tended to be the familiar diabetes, CHD, fruits and vegetables, etc. Type 2 diabetes needs to be specified.
- There were some topics selected that were not covered by the syllabus, such as junk food, refined and unrefined foods, egg and chicken production, pulses, breakfast, ketogenic diets, creatine and the glycemic index per se is not on the syllabus although in section 2:1 the importance of the slow release of glucose from starch is.
- The choice and justification of the titles was weak in some cases.
- 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 methods were stated in the plan of action but were not used in the study.
- 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.
- 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 candidates are still using Wikipedia for research, which is an unreliable source, although there are fewer doing this than in previous series.
- 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 few studies just had pages of photographs with no annotation or explanation.
- 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. 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. Studies are only marked up to the upper limit, i.e. 4500 +10%.