2012 Assessment Report

VICTORIAN CURRICULUM AND ASSESSMENT AUTHORITY

2012 Food and Technology GA 3: Written examination

GENERAL COMMENTS

The 2012 Food and Technology examination assessed students' knowledge and understanding of Areas of Study 1, 2, and 3 of Units 3 and 4. All key knowledge and skills that underpin the outcomes were examinable.

The paper consisted of two parts: Section A contained 15 multiple-choice questions and Section B contained six short-answer questions.

This report should be read in conjunction with the 2012 Food and Technology examination paper.

Areas of strength and weakness

Strengths

- understanding the requirements of labelling
- demonstrating an understanding of food poisoning and food spoilage
- demonstrating an understanding of the role of AQIS
- demonstrating an understanding of health and safety practices in food storage and preparation
- demonstrating an understanding of correct hygiene practices in food preparation and processing
- demonstrating an understanding of the process of genetic modification and its advantages
- understanding functional foods
- understanding packaging systems – modified atmosphere and aseptic
- understanding the role of a prototype in new product development
- understanding the term 'danger zone' and its role in ensuring safe food

Weaknesses

- providing answers that were irrelevant or not directly related to the question asked
- not giving specific examples for questions when required
- not reading the information provided in the question and relating the answer to this information
- not understanding the process of microencapsulation
- not understanding the role of each level of government in ensuring safe food for consumers
- not understanding the microwave method of cooking food
- not understanding land degradation
- not understanding or describing environmental issues in food production and their impact on the environment
- not explaining the responsibilities of Food Standards Australia New Zealand (FSANZ) and their role in developing the Food Standards Code
- not explaining the Hazard Analysis and Critical Control Point (HACCP) system and its role in ensuring safe food production
- not explaining functional roles of the natural components found in key foods in food preparation and processing
- not understanding the purposes of packaging
- not explaining complex processes used in food production
- not understanding qualitative and quantitative analysis of foods
- not understanding terms used in the study design; for example, strategies, sensory properties, product development, functions and design process.

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SPECIFIC INFORMATION

Note: Student responses reproduced in this report have not been corrected for grammar, spelling or factual information.

This report provides sample answers or an indication of what the answers may have included. Unless otherwise stated, these are not intended to be exemplary or complete responses.

Section A – Multiple-choice questions

The table below indicates the percentage of students who chose each option. The correct answer is indicated by shading.

Question	% A	% B	% C	% D	Comments
1	9	38	5	47	Enzymatic browning occurs when oxygen is present. Option D was the only alternative that mentioned oxygen.
2	7	4	8	81	
3	10	71	13	5	The designer has limited control over the constraints in a design brief as the design brief is the focal point of the design process. The design brief and the considerations will form the criteria for evaluation questions that will determine the success of the product. These questions may relate to market research, available ingredients, available machinery and equipment, but are established in the design brief that the designer would receive.
4	50	5	14	30	Emulsification is a process used to prevent a mixture of dissimilar liquids from separating. The ingredients are suspended in a liquid; for example, in a mayonnaise.
5	3	1	93	2	
6	2	5	45	48	A food intolerance is a chemical reaction in the body to a particular food. It is not life-threatening and does not involve the immune system.
7	2	7	80	12	
8	5	9	12	74	Functional properties of food are the physical and chemical properties of food ingredients and the way they react during preparation and processing to produce successful products.
9	11	22	23	43	The Victorian Department of Human Services is part of the state government. Their role is to develop food safety standards based on the Food Standards Code, oversee the food-poisoning incident, analyse any food samples, issue closing orders of a food premise and approve the qualifications of food safety auditors. The other options combine local and state government roles.
10	47	6	26	20	A nutrition content claim is a statement about the content of certain nutrients or substances in food. Options B and C included information about a health benefit that the nutrient fibre could provide.
11	14	10	57	19	Modified Atmosphere Packaging is a system that changes or modifies the atmosphere or gas inside a package from air in order to extend the shelf life of a product. Some of the examples in Options A, B and D referred to the gas/air inside the package being removed.
12	23	65	7	5	Membrane technology involves using a porous membrane or filter to separate particles in a fluid. Options A, C and D included an example of a type of heat treatment.

Question	% A	% B	% C	% D	Comments
13	47	20	12	21	Microwave cooking causes the molecules in food to vibrate rapidly. The thickness and moisture content of food will determine how far microwaves penetrate food. This depth is approximately 25 cm. The Maillard reaction does not occur, since the microwave oven does not get hot and the food does not come into contact with high, dry heat. The heat is produced inside the food. Foods with a high water content are most suitable for cooking in a microwave as cooking continues after the microwave oven is turned off because it allows for residual cooking time. Foods cooked in a microwave oven need standing time.
14	16	5	63	17	Foodborne illness is caused by bacterial contamination.
15	6	37	41	16	Degradation of land results in poor soil health. Nitrogen is essential for soil health. Crop rotation can improve the soil. Options A, C and D did not deal with preventing soil degradation.

Section B

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Question 1ai–ii.

Marks	0	1	2	3	Average
%	29	11	25	35	**1.7**

1ai.

Line extension

1aii.

Two of

- to increase their product range
- to enhance the appeal of their product line over other competitors' products
- to expand company profits by introducing another product
- a response to increased consumer demand for spreads for children
- success with previous products has developed a brand loyalty that they wish to maintain
- a line extension is a simpler process for the manufacturer as the product only requires a minor adjustment, such as modifying the nutrient content
- the manufacturer already has the necessary skills and equipment to produce the product.

Question 1b.

Marks	0	1	2	Average
%	28	29	43	**1.2**

For full marks, students needed to provide a definition and an example or give two examples using the ingredients of Yeasty Mite.

A suitable response could have been: My First Yeasty Mite is considered a functional food because it provides a health benefit beyond basic nutrition. My First Yeasty Mite has a reduced sodium content compared with that of the traditional spread. It also provides a greater amount of Vitamins B_6 and B_{12} than the traditional spread.

Question 1c.

Marks	0	1	2	3	4	Average
%	15	16	23	12	33	**2.3**

A suitable response could have included two of the following purposes of packaging.

- To preserve the food: to reduce the rate of spoilage or deterioration of My First Yeasty Mite.
- To contain the food: My First Yeasty Mite needs to be contained as it is handled and transported.
- To protect the food: to ensure that My First Yeasty Mite arrives to the consumer in good condition and is not contaminated.
- To communicate information about the product: the packaging will promote My First Yeasty Mite and tell consumers what the product is, promoting the product. It will also provide nutritional information about My First Yeasty Mite via the nutritional panel, the size of the product and the freshness of the product using a best-before or use-by date.
- For convenience: the packaging makes My First Yeasty Mite convenient for the consumer to use as it would be lightweight and easy to handle, and can be easily resealed with the screw-top lid.

The following is an example of a high-scoring response.

Protection- The packaging protects the food from damage during transportation and from contamination.

Preservation- the package can preserve the product by sealing the spread in a closed, sterile environment –until opening to increase its shelf life.

Question 1d.

Marks	0	1	2	Average
%	34	17	49	**1.2**

Two of

- weight: the weight or mass of the product is measured on scales
- volume: the space taken up by the spread in the container (a three-dimensional space)
- size: may measure height or circumference of a product to make comparisons
- colour: to ensure the visual features of the foods meet customers' expectations. Can be measured using computer technology
- viscosity: the consistency of the product, its ability to spread
- chemical analysis/nutrient content: this testing provides information that ensures the product has lower sodium content and is higher in Vitamins B_6 and B_{12} than the original.

The following is an example of a high-scoring response.

Viscosity of the product. ie. How runny the spread is.

Weight of the product. ie. How heavy the spread is.

Question 1e.

Marks	0	1	2	Average
%	33	19	48	**1.2**

A suitable response could have been: A quantitative analysis is a scientific test to measure the features of the product such as size, weight, volume, colour, viscosity and nutrient content to ensure accurate data can be provided, whereas a qualitative analysis evaluates the sensory properties of the product to ensure that the customer is pleased with the spread; for example, the appearance, aroma, flavour and texture of My First Yeasty Mite.

Students often confused the types of analysis.

The following is an example of a high-scoring response.

Qualitative analysis of the food refers to a range of sensory tests used to rate the organoleptic properties of the product. Quantitative analysis of the product refers to scientific techniques used to rate/determine qualities of the product such as weight, volume, shelf life etc.

Question 2a.

Marks	0	1	2	Average
%	24	22	54	**1.3**

Suitable responses included two of the following.

- Does the new Light and Cheesy spread contain omega-3?
- Is the new Light and Cheesy spread lower in fat than regular cream cheese?
- Has the new Light and Cheesy spread been packaged in mini tubs suitable for individual serves?

Student responses needed to be in the form of a question and be based on the information provided in the question.

Question 2b.

Marks	0	1	2	Average
%	26	29	45	**1.2**

Suitable responses could have included two of the following.

- The prototype might have indicated that the ingredients in the original recipe were not in the correct proportion and did not give the desired cheesy flavour or texture.
- The manufacturer may have had difficulty in masking the fishy taste of omega-3 in the original recipe and needed to adjust the recipe to overcome this problem.
- The manufacturer may have found that they did not have the necessary equipment to add the omega-3 during production or that their equipment was not suitable for packaging into individual serves.
- A qualitative analysis of the prototype may have determined that the product was not lower in fat than regular cream cheese and that the recipe or ingredients may have required reformulation.
- The sensory properties of the first sample product might not have been acceptable and the recipe needed to be reformulated to improve the flavour or texture of the Light and Cheesy spread.
- Testing of the first sample may have shown that the shelf life of the new product was not acceptable and the recipe may have required adjustment.
- An estimation of the cost of production of the first sample of the new Light and Cheesy spread may have shown that it was too expensive to produce and would not guarantee a profit for the producer. The recipe may have been adjusted to use alternative or cheaper ingredients.

Question 2c.

Marks	0	1	2	Average
%	36	20	45	**1.1**

A suitable response could have been: Microencapsulation is the packaging of small particles of an active or functional ingredient in a minute capsule. The process is used to mask the flavour of ingredients or to extend their shelf life within a food product. For example, microencapsulation may have been used to mask the fishy flavour in the addition of omega-3 to the cream cheese spread.

Many students' descriptions of microencapsulation were unclear and did not relate to the new cream cheese spread, as directed in the question.

The following is an example of a high-scoring response.

Microencapsulation is the packing of small particles of an active functional ingredient into a minute capsule to mask the flavour, improve the characteristics. For example the new cream cheese spread contains omega-3 which is added using microencapsulation process to mask the fishy flavour of the omega-3.

Question 2d.

Marks	0	1	2	Average
%	33	33	34	**1**

A suitable response could have included two of the following advantages.

- Can be used to mask unwanted flavours and odours of ingredients; for example, the fishy odour and flavour associated with omega-3.
- Protect the active ingredient during manufacturing; for example, the active ingredients can survive
  - baking and ultra-heat treatment (UHT) processes
  - freezing and thawing (ice-cream)
  - acidulation (required in the manufacture of yoghurt and mayonnaise)
- Improve the properties of the core material during the manufacturing process so that they can be released in a controlled manner. For example, it can be used in the manufacturing process of bread products, encapsulating the raising agent to prevent it from releasing and reacting before a certain temperature is reached.

- Enhance the sensory properties of a food product. For example, it is used to stabilise the natural colour pigments in the production of jellybeans.
- Enable the core material to be evenly distributed throughout the product without interfering with other ingredients.
- Can protect the active ingredients from being exposed to oxygen and deteriorating.
- Used by manufacturers in meat production to replace the high proportion of fat with protein material.

This question was poorly answered.

The following is an example of a high-scoring response.

Unpleasant flavours can be masked.eg. fishy omega-3 smell and taste.

Improved products characteristics – microencapsulation can prevent active ingredients from reacting prematurely e.g. in breads when the capsules are heat resistant and will only release the active ingredient when a certain temperature is reached.

Question 2e.

Marks	0	1	2	Average
%	36	30	34	**1**

A suitable response could have included the following.

- Health concerns: consumers are concerned about diet-related diseases, nutrition and healthy eating, so are demanding foods that have a health benefit. For example, the Light and Cheesy spread contains added omega-3 that assists in eye function, heart health and infant brain development.
- Increased knowledge: many consumers have an increased knowledge of diet-related diseases and the links between food consumption, good health and prevention of diseases and are looking for food products that address these concerns, such as reducing fat content.
- Increased demand for convenience: many consumers are now living in single-person or small households, so they are looking for products in smaller portions, such as individual serves.

Students needed to use one of the driving forces given in the question stem – social pressures or consumer demands. If 'time-poor' was used as a driving force, the explanation needed to include a relevant example.

Many students were unable to able to explain the link between the driving force selected and the development of the new product.
The following is an example of a high-scoring response.

Consumers are becoming increasingly aware of diet and the link to disease. They are looking for foods that have a health benefit and the Light and Cheesy spread has added Omega-3 and is low in fat.

Question 2fi–ii.

Marks	0	1	2	3	Average
%	35	23	23	18	**1.3**

2fi.
A suitable response could have been: A niche market is a small portion of the target market that has specific needs which are not being met by other products.
Students needed to include both key points in their answer to be awarded two marks – that is the niche market is a small section of the target market and the niche market have specific needs.

The following is an example of a high-scoring response.

This is a very specific group of people within a target market, who have specific needs and wants that are not being found in other foods.

2fii.
A suitable response could have included one of the following.

- elderly people with concerns for heart health
- consumers concerned about heart health
- pregnant women concerned for the brain health of their unborn child

- consumers who want to maintain a healthy weight

Question 2gi–ii.

Marks	0	1	2	Average
%	47	47	7	**0.6**

2gi.
A profiling test

2gii.
A suitable response could have included one of the following points.

- evaluates the individual characteristics of the cream cheese spread
- could be used by the manufacturer to compare the cream cheese spread with a competitor's product
- could be used by the manufacturer to identify aspects of the cream cheese spread that could be improved
- can provide the manufacturer with a description of the product

Question 3a.

Marks	0	1	2	Average
%	67	24	10	**0.5**

A suitable response could have included two of the following points.

- the identity/description of a given food
- composition – permitted ingredients/additives
- permitted micro-organism levels
- analytical standards; for example, measurement of fibre level or vitamin content
- any contaminant or residues; for example, agricultural chemical residues
- food safety programs based on HACCP
- requirements for the design of food premises to minimise food contamination
- primary production and processing standards

Any answer, other than food labelling, covered by the general food standards, food product standards, food safety standards and primary production standards was acceptable.

This question was very poorly answered.

The following is an example of a high-scoring response.

They would be required to follow the guidelines on food safety practices and legislation on the amount of additives and permitted ingredients allowed in the food.

Question 3b.

Marks	0	1	2	Average
%	3	10	87	**1.9**

A suitable response could include two of the following.

- prescribed name of the food
- lot identification
- name and address of supplier
- mandatory warning and advisory statements
- ingredients list
- date-marking – best-before or use-by date
- nutrition information panel
- percentage labelling
- directions for use and storage
- country of origin
- weight or measures.

Inclusion of the barcode is not an acceptable response because it is not a mandatory requirement.

Question 3c.

Marks	0	1	2	3	4	Average
%	31	12	18	15	23	**1.9**

A suitable response could include two of the following.

- Hazard analysis: Involves the identification of hygiene and food production safety hazards. This could include potentially hazardous ingredients; for example, eggs or chicken, cooking or holding temperatures for food, or the use of chemical cleaning agents in the production process.
- Identify the critical control point: This step identifies the points at which important things can go wrong; for example, temperature control and sanitation.
- Set the 'critical limits' for each critical control point: For example, set the cooking temperature for individual food items or the temperature to which food should be chilled.
- Monitor the critical control points: Establish a system to check and record critical limits to ensure that they are not exceeded. For example, check and record refrigerator or freezer temperatures on a daily basis or use a temperature probe to check the internal temperature of meat products during cooking.
- Establish corrective action: Procedures must be developed to overcome any problem that might occur. For example, food being discarded and/or staff being retrained.
- Set up records: The company must establish a set of records of the results of monitoring their critical control points (for example, refrigerator temperatures). These records are used for auditing purposes and to enable the company to check for improvements.
- Verify that the HACCP system is working correctly: The company must review the system on a regular basis and also implement an annual independent audit. As a result of the audit, the company must amend and update the system if that is shown to be necessary. For example, improvements in sanitation procedures and food-handling practices.

This question was poorly answered.

The following is an example of a high-scoring response.

Identify critical control points. This stage is detecting where possible hazards can occur such as temperatures of a freezer or cleaning practice.

Monitor critical control points. Once critical control points are identified they must be checked and the results recorded to make sure they are not exceeded. For example monitoring and recording temperatures of refrigerators to ensure they are below the 'danger zone'.

Question 3d.

Marks	0	1	2	Average
%	53	20	27	**0.8**

One of the following with a complete description was required for full marks.

- It is important for the aerial spray contractors to prevent spray from drifting onto other paddocks by flying low to the ground and spraying the haricot crop accurately.
- Selecting days for aerial spraying when there is little wind to prevent the spray from drifting onto other fields or into waterways.
- The aerial spray contractor could use global positioning system (GPS)/satellite-tracking technology. This would enable them to select the best flight path and accurately determine the area to be sprayed.
- The primary producer should monitor their haricot bean crop regularly to determine whether they have an insect infestation on their crop and if the spraying of pesticides is required.

If organic farming was given as an answer students needed a clear link to the lack of chemical usage.

Question 3e.

Marks	0	1	Average
%	49	51	**0.5**

A suitable response could have been: Primary processing is important as it makes the raw ingredients safe to eat so that they can be consumed individually or used in the manufacture of other food products.

Question 4a.

Marks	0	1	2	Average
%	5	20	75	**1.7**

A suitable response could have included two of the following.

- follow rules for good personal hygiene when preparing the lunch
    - wash hands frequently, tie back long hair
    - do not wear jewellery, nail polish or nail extensions
    - wear an apron/clean clothes
    - ensure cuts/grazes, etc. are clean and covered with a clean, waterproof dressing
- leave the cooked chicken in the refrigerator until required
- ensure work surfaces and equipment are clean
- pack the lunch in an insulated cool box
- check the use-by or best-before dates on food items such as the mayonnaise or muffin
- minimise cross-contamination by washing equipment between preparing raw and cooked ingredients.

Question 4b.

Marks	0	1	2	3	Average
%	15	10	23	52	**2.1**

Refer to the table below for a suitable response.

Temperature zone	Description
above 60 °C	At temperatures of 60 °C and above bacteria will begin to die, and thus reduce the risk of food poisoning. At 100 °C bacteria spores may still survive, and if food returns to a more favourable temperature (such as in the danger zone) the risk of food poisoning will return.
5 °C–60 °C	While food is in the 'danger zone' (the temperature range of 5 °C–60 °C) bacterial growth is at its most rapid as long as the other conditions for growth are present (food supply, moisture, time, oxygen and low-acid environment).
below 5 °C	As bacteria pass through the temperature range of 5 °C–0 °C, their ability to multiply starts to slow down as they become less active. As bacteria enter the temperatures of 0 °C and below they become dormant and do not multiply.

Students needed to demonstrate their understanding of what is happening to the bacteria at each temperature zone.

Question 4c.

Marks	0	1	2	Average
%	13	30	57	**1.5**

A suitable response could have been: Food that is spoiled often has poor sensory properties (appearance, aroma, flavour or texture) but is not harmful to eat. However, food poisoning refers to a severe illness caused by food that is contaminated by food-poisoning bacteria. Food poisoning can be potentially life-threatening. Food contaminated by bacteria may not look, smell or taste 'off'.

Students were required to explain the difference between both food spoilage and food poisoning. Many students gave only definitions of food spoilage and food poisoning, without indicating the differences between them.

Question 4d.

Marks	0	1	2	3	4	Average
%	19	15	26	23	17	2.1

A suitable response could have included two of the following for both the consumer and the manufacturer.

Consumer	Manufacturer
• enables some food to be available all year round, regardless of season • can lead to improved health such as lowering fat intake or increasing fibre intake • can produce meal solutions for time-poor consumers • can improve the sensory properties of some foods	• enables easier storage and transportation • can increase the variety of food products available, which leads to increased sales • enables foods to be processed at the peak of their quality • can extend the shelf life of some perishable foods and minimise food wastage

This question was poorly answered.

The following is an example of a high-scoring response.

Secondary processed food can be convenient for the consumer to use rather than making it from fresh ingredients e.g. avocado spread. It saves the consumer time during preparation. It can make foods available all year around.

The manufacturer can use food waste such as skins, seeds and reuse them to make fruit pastes. Secondary processed foods can be stored more easily and are easier to transport.

Question 4ei–ii.

Marks	0	1	2	3	4	Average
%	27	21	21	16	15	1.7

4ei.
Students were required to respond to the use of energy during manufacture of tortillas. Responses related to energy use during farming were not acceptable.

A suitable response could have been: Energy used during manufacture may come from non-renewable resources such as gas and electricity. These can then produce carbon emissions, which contribute to the greenhouse effect.

This question was poorly answered.

The following is an example of a high-scoring response.

The energy used during the manufacture of the tortillas could be from gas or electricity which are non-renewable and will result in greenhouse gas emissions going into the environment.

4eii.
A suitable response could have included one of the following.

- upgrading refrigerator and compressed air systems used to reduce the amount of energy used
- installing new and more efficient equipment that could be operated using less energy
- insulate hot water systems and air-conditioning units to reduce energy loss
- install solar panels to heat water for staff facilities to reduce the amount of energy taken from the grid
- recover and reuse waste heat in the heating of the work area to reduce energy costs
- install a system to monitor energy use and measure emissions
- educate staff about the efficient use of energy

This question was poorly answered.

The following is an example of a high-scoring response.

Manufacturers should ensure that their equipment is up to date and as efficiently as possible. Where possible they should utilize renewable sources of energy such as solar power and wind power to replace gas and electricity.

Question 4fi–ii.

Marks	0	1	2	3	Average
%	20	22	30	28	**1.7**

4fi.
A suitable response could have been: The process of genetic modification involves altering the genetic material of plants or animals by duplicating, removing or inserting one or more new genes into the organism to improve its characteristics.

4fii.
A suitable response could have included two of the following points.

Genetic modification can

- increase the nutrient content of some foods
- improve the sensory properties of foods such as colour, flavour or texture
- enable the development of crops that are drought-resistant, tolerant of high-salt soils or resistant to extreme cold
- enable crops to be produced that can produce a higher yield per hectare
- modify crops so that they become resistant to pests or disease, resulting in fewer pesticides and herbicides being used
- enable the development of foods with a delayed ripening, which will extend their shelf life
- enable edible vaccines to be added to some food products, assisting in large-scale immunisation programs.

Question 5ai–ii.

Marks	0	1	2	3	4	5	6	Average
%	17	17	19	16	15	9	8	**2.5**

A suitable response could have included two of the following preservation techniques explanations and examples.

Preservation technique	Explanation of how the process will preserve food	Food item
Dehydration	Dehydration removes moisture from food to between 5 and 25 per cent. A lack of moisture prevents the food-spoilage bacteria from reproducing.	• dried apricots • fruit leathers • dehydrated tomatoes • dried apples
Use of sugar	Sugar is added to fruit in strong concentrations, which provides an environment that is unsuitable for the growth of microorganisms such as in jam-making.	• berry jams • orange marmalade • quince or apple jelly
Use of acids	When making chutneys or pickles, large quantities of acid (usually vinegar) are added. The addition of vinegar changes the pH level and the high acid level prevents the growth of food-spoilage bacteria.	• apple chutney • pickled onions
Heat processing (bottling)	In bottling, the fruit or vegetable is surrounded by a liquid in the bottle and heated to a temperature of between 74 °C and 100 °C. The heat kills the food-spoilage microorganisms and creates a partial vacuum that seals the bottle and stores the food in a controlled environment.	• bottled stone fruits • bottled pears • bottled cherries

Question 5b.

Marks	0	1	2	Average
%	27	39	34	**1.1**

A suitable response could have been: A production plan would allow Kristina to plan her time and outline each step, identifying the ingredients, equipment and processes needed to carry out each of the preservation techniques she was using.

Question 5ci–ii.

Marks	0	1	2	3	4	Average
%	28	17	26	14	15	**1.7**

A suitable response could have included two of the following steps, decisions and the impacts for full marks.

Step in recipe	Decision to be made	Impact of the decision
Beat the egg whites and cream of tartar	Have the egg whites been beaten to soft peak stage?	• If beaten to soft peaks, the mixture will incorporate a large amount of air and the finished sponge cake will be light and fluffy. • If under- or over-beaten, the mixture will not hold sufficient air and will not rise or have a light and soft texture.
Add the sugar one tablespoon at a time	• Has a stiff meringue been formed? • Has the sugar been added gradually to enable it to dissolve in the egg mixture and form a stable meringue?	• If a stiff meringue is not formed the sponge cake mixture will not hold its structure. • A sugar crust may form on the sponge top if the sugar is not dissolved sufficiently before adding another tablespoon.
Add the egg yolks; fold in the flour	• Is the mixture thick and pale in colour and will it hold a 'figure 8'? • Has the flour been folded in gently until it is no longer evident in the egg mixture?	Over-beating when adding the egg yolk or over-folding when adding the flour will mean a loss of air from the egg foam; the sponge cake will have less volume when baked and will be flatter in appearance.
Bake in the preheated oven	• Has the sponge cake been baked until it is just firm when touched lightly with the finger? It should 'spring back' when touched lightly. Using a skewer is not an acceptable method of testing the sponge.	• If removed from the oven before it is cooked, the sponge cake will collapse because the albumen will not have set. • If overcooked, the sponge cake will be tough and dry.

Students were required to select a step listed in the stem of the question and describe the impact of the decision on the cooked sponge cake. Students were not asked to describe the step. No marks were awarded for selecting the step.

Question 5d.

Marks	0	1	2	Average
%	47	37	16	**0.7**

A suitable response could have been: When the egg white is beaten, the protein (albumen) stretches and forms a thin mesh-like membrane that traps air bubbles, increases in volume and forms a foam.
This question was poorly answered.

The following is an example of a high-scoring response.

> *Proteins are denatured causing a permanent structural change. As it is beaten proteins form a mesh-like structure that traps the air and results in a foamy, voluminous structure.*

For full marks the description needed to include the physical change in the egg whites, not just a general definition of denaturation.

Question 5e.

Marks	0	1	2	Average
%	37	31	31	**1**

A suitable response could include two of the following points.

- emulsification
- thickening of mixtures
- structure
- improving colour
- setting products
- binding ingredients together

Question 5f.

Marks	0	1	Average
%	62	38	**0.4**

Maillard reaction

Question 5g.

Marks	0	1	Average
%	15	86	**0.9**

A suitable response could include one of the following.

- roasting
- grilling
- frying

Question 5h.

Marks	0	1	2	Average
%	6	33	60	**1.6**

A suitable response could have included two of the following.

- If using a gas oven, ensure the oven lights immediately or turn it off for a few minutes to allow the gas to disperse.
- Check that the oven racks are in the correct position before lighting as they will heat up quickly and can cause a burn if moved after lighting the oven.
- To avoid burns, use an oven mitt when removing baking equipment from the oven.
- Open the oven door completely so that it does not slam shut while removing the food from the oven.
- Always close the oven door completely after removing food to prevent someone tripping over it or bumping into it.

Question 6

Marks	0	1	2	3	4	5	6	7	8	Average
%	40	22	14	9	6	4	3	1	1	**1.5**

Students needed to demonstrate understanding of the role of different authorities at a national, state and local level, and their interrelationship in regard to food recall. A suitable response could have been: In Australia, the national, state and local authorities all have roles and responsibilities in managing a food recall. Food Standards Australia and New Zealand (FSANZ) is the national authority that has the overall responsibility for coordinating all food recalls. They also keep a record of all recall notices. FSANZ develops the food recall standard: 3.2.2 and develops the guidelines or food recall protocols that the industry throughout Australia uses to recall a product from sale. They work with the state and local authorities to gather all the information about the recall. At state level, the Department of Human Services (DHS) bases all its protocols on the standards set by FSANZ. They appoint food recall action officers who have the responsibility to oversee the recall of any food product within the state if they receive information from a manufacturer that a recall is required. The DHS monitors the effectiveness of any recall within the state and may provide scientific and technical advice to companies as a part of the recall process. The DHS is also responsible for informing municipal authorities of any food product recall. They oversee the destruction of recalled products. Based on the information provided by the DHS, local authorities will enforce the food product recall. The environmental health officers employed

by local authorities will ensure that all recalled food is removed from the shelves and that it is destroyed and disposed of. Local authorities do not have any legislative powers in the recall process.

This question was poorly answered.

The following is an example of a high-scoring response.

The implementation of a food recall in the case of an unsafe product which needs to be removed from sale, involves all levels of government – Federal Government, State Government and Local Government. The Federal Government have developed a committee called Food Standards Australia New Zealand (FSANZ) who are responsible for the development of food safety standards in relation to food recalls to ensure that consumers are protected from foods that may harm their health. They develop food recall protocols for the States to follow. FSANZ monitor and coordinate all food recalls within Australia. FSANZ also work with the manufacturer, in this case Granello Foods, and also state authorities to gather information about the recall so that consumers can be notified of the unsafe food product by placing advertisements in newspapers. The state government use the guidelines set out by FSANZ with regard to food recalls to notify local council of food recalls requiring action. The State Government (department of human services- DHS) monitor the effectiveness of the food recall and also appoint a food recall officer to be in charge of recalling the Granello frozen lasagne within the state. The Local Government enforce the food product recall in conjunction with State authorities. Environmental Health Officers are responsible for ensuring the Italian Lasagne dinner frozen pre-prepared meal is taken off the supermarket shelves by going around to all food premises that may sell the frozen lasagne, within the council region. Environmental Health Officers are also responsible for overseeing the disposal and destruction of the frozen lasagne so it will not harm consumer health.