

2014 Food and Technology GA 3: Written examination

GENERAL COMMENTS

The 2014 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 five short-answer questions (with multiple parts) and one extended-response question.

Areas of strength

Demonstrating an understanding of:

- food poisoning and food spoilage
- health and safety practices in food storage and preparation
- correct hygiene practices in food preparation and processing
- the role of enzymes
- microencapsulation as a new technology in food development
- requirements for yeast growth

Areas of weakness

- not giving specific examples when required in the question
- not reading the information provided in the question and failing to relate the answer to that information
- not understanding the role of each level of government in ensuring safe food for consumers
- not understanding the requirements of nutrition labelling
- not understanding the Australian Food Standards Code
- not understanding or describing environmental issues in food production and their impact on the environment; for example, salinity and energy usage
- not explaining functional roles of natural components found in foods such as eggs and meat used in food preparation and processing
- not understanding the difference between convection and conduction as methods of transferring heat during the cooking of food
- not understanding product evaluation as a step in the design process
- not understanding modified atmosphere packaging (MAP) systems
- not understanding terms used in the study design; for example, 'strategies', 'sensory properties', 'product development' and 'individual production plans'

This report should be read in conjunction with the 2014 Food and Technology examination paper.

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 answers may have included. Unless otherwise stated, these are not intended to be exemplary or complete responses.

The statistics in this report may be subject to rounding resulting in a total more or less than 100 per cent.

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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	3	3	86	
2	16	49	26	9	Aseptic packaging does not allow the food to be kept indefinitely. While these foods have an extended shelf life of approximately six months or more, they do have a 'best-before' date and will not keep indefinitely.
3	4	15	70	12	
4	7	1	87	4	
5	1	13	4	82	
6	83	3	7	7	
7	6	7	12	75	
8	48	14	15	24	Closing orders are issued by the state authority. Local authorities follow up on these closing orders and are responsible for inspecting food premises in their municipalities. The national authority develops food safety standards.
9	16	55	21	8	Deep-frying in oil is an example of convection currents cooking food. Pan-frying bacon is an example of cooking by conduction, and cooking bread in a toaster and grilling meat on a barbecue are examples of cooking foods by radiation.
10	17	8	15	60	
11	76	18	5	1	
12	5	2	31	62	
13	68	1	2	29	
14	10	40	6	43	All foods that are sold in a package are required to be labelled according to the Food Standards Code. Some fresh vegetables including packaged sprouting seeds such as bean sprouts are not exempt.
15	12	44	7	37	Soil erosion is the loss of the topsoil. The other responses dealt with soil management and organic farming.

Section B

Question 1a.

Marks	0	1	2	Average
%	31	35	34	1.1

A suitable response could have included both of the following.

- to determine if the product meets the aims or intent of the company based on the specifications in the design brief
- to determine if the design/prototype meets the aims or intent of the company, as included in the design brief

Question 1bi.

Marks	0	1	Average
%	29	71	0.7

'Me-too'

'Direct copy' was not an acceptable response to this question.

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Question 1bii.

Marks	0	1	2	3	Average
%	27	25	28	20	1.4

A suitable response could have included any three of the following advantages.

- a competitor's product is already successful in the marketplace, so Takehome Tucker could make a profit
- it is more reliable to produce as the product is already popular
- it is less expensive to develop as research has already been done and the product is already proven to be successful, so the research stage can be bypassed
- Takehome Tucker can enter an established market for the first time and may gain a share of the growing market
- advantage can be taken of an already popular food and brand loyalty already established, and profits more easily increased.

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

Advantages to Takehome Tucker that the business can build on brand loyalty. The market research stage can also be by-passed by the company and lastly the similar product has proven to be successful with other companies already, so it will be more likely to sell, compared to a new product that has not been in the marketplace before.

Question 1c.

Marks	0	1	2	3	Average
%	2	4	15	80	2.7

Any three of:

- wash hands thoroughly
- keep fingernails short and clean
- do not wear nail polish or nail extensions
- do not wear jewellery
- wear a clean apron to protect clothing
- wear clean clothes
- tie hair back or wear a hairnet to prevent loose hair falling into food
- cover cuts and wounds or wear food-handling gloves.

Question 1d.

Marks	0	1	2	Average
%	44	47	9	0.7

Any two of the following nutrition labelling requirements:

- if the manufacturer makes a claim about a nutrient (for example, it is high in fibre), then the amount of the specific nutrient needs to be stated in the nutrition information panel
- the nutritional information must be included as both per serve and per 100 grams
- the nutrition information panel must include the number of servings in the packet
- it must include a nutrition information panel to identify the amount of nutrients present in the food.

This question was not well answered.

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

Takehome Tucker must include a nutrition table listing ingredients and showing the amount of energy and nutrients the product contains. They must also include the amount of nutrients per serve and per 100 grams.

Question 1e.

Marks	0	1	2	Average
%	36	28	36	1

A suitable response could have included one of the following explanations. A niche market is a small section of the target market:

- on which a specific product is focused
- that has specific characteristics
- that has a specific need to be catered for.

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Question 1f.

Marks	0	1	2	3	4	Average
%	37	25	24	7	6	1.2

A suitable response could have included any two of the following aspects.

- Product evaluation: they would evaluate the physical, sensory and nutritional properties of the new Mac 'n Cheese using consumer feedback to ensure that the product is appealing to consumers.
- Production evaluation: the company could review issues such as the expertise of staff, availability of ingredients, any problems encountered in scaling up production from the prototype stage and the effectiveness of their HACCP system.
- Economic evaluation: the company would evaluate the cost of the development process, including the production costs and sales figures, to determine if they will make a profit.
- Marketing evaluation: they would evaluate the success of their marketing strategy to determine which strategies had the greatest success and allowed for the greatest market penetration; for example, television advertising, magazine advertising or in-store taste-testing.

This question was not well answered.

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

The company, once the Mac 'n Cheese product has been launched and is available for sale may undertake customer surveys in order to gain an understanding of any strengths and weaknesses such as physical and sensory properties, and how well the product appeals to them. They will look at any complaints they receive. The company can also look at sales to consumers compared to the cost of developing and manufacturing the product as a way of identifying if the product has been successful in making a profit.

Question 2a.

Marks	0	1	2	3	4	Average
%	6	11	33	25	24	2.5

Suitable responses could have included some of the following points on two of the food trends listed below.

Organic and sustainably produced food products

- increasing demand by consumers for environmentally sustainable food – organic food, low food miles, seasonal foods, minimally packaged foods, food with recycled packaging, types of animals used for meats
- increasing availability of organic and sustainably produced food products
- increasing uptake of sustainable farming and packaging practices
- increasing awareness of/interest in environmentally sustainable practices – farming, packaging, shopping practices in the community

Home-brand products

- increasing cost of food and this impacts on household budgets
- people living on restricted weekly budgets – families with children, elderly people, refugees, unemployed
- availability of greater range of quality home-brand products – for example, from large supermarkets
- consumers are very price-conscious and are looking for value and to save money
- less stigma with purchasing/using home-brand products

Healthy snack food options

- consumers have a greater awareness of the link between health and nutrition – foods low in saturated fat, salt and sugar, and foods high in fibre
- increasing demand/availability for healthy 'food-on-the-go', due to busy lifestyles/snack options/individual sizes – fruit/vegetable snack packs

Flavours of South America and Asia

- increased cultural diversity – demand for greater variety of foods as migration from these countries increases
- more accessible overseas travel to non-traditional locations such as South America
- Australia's close proximity to Asia – greater understanding of cultures/foods
- Australia's increasing production and/or availability of a greater variety of ingredients, such as quinoa, chia seeds and Asian vegetables

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- more interest in ancient grains, such as quinoa and chia seeds from South America, for health reasons, for example, alternative complete protein sources, gluten-free and variety of grains
- simpler cooking techniques of Asian foods, such as stir-frying/steaming – require fewer technical skills, are quick to prepare, and produce fresh meals that are full of flavour
- increasing popularity of street food – easy to eat, quick to cook, fresh

Students needed to explain why each food trend has become a driving force for food product development, not just describe the food trends.

Question 2bi.

Marks	0	1	2	Average
%	11	47	42	1.3

- protein
- fat

Question 2bii.

Marks	0	1	2	3	Average
%	53	25	16	6	0.8

When heat is applied to meat during cooking, the protein in meat will denature by coagulation and undergo a permanent structural change. This causes the meat to shrink and become firm. During cooking the fat in meat will melt and also contribute to the flavour of the meatballs.

This question was poorly answered.

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

Cooking the meatballs will cause the protein in the beef to denature and coagulate, forming a thick mass that is lighter in colour and firmer than the raw product. The protein undergoes a permanent change. Cooking the meatballs will soften and melt the fat in the beef, resulting in a moist mouthfeel and good flavour.

Question 2c.

Marks	0	1	2	Average
%	50	33	17	0.7

A suitable response could have included any two of the following food standards.

- General food standards, such as:
 - Substances added to Food, such as food additives and vitamins and minerals
 - Contaminants and Residues; for example, maximum agricultural residues
 - Foods Requiring Pre-Market Clearance; for example, food produced using gene technology
 - Microbiological and Processing Requirements
- Food product standards, such as for meat, eggs and fish
- Food safety standards, such as:
 - Food Safety Programs based on HACCP for the production of the meatballs
 - Food Safety Practices and General Requirements; for example, related to storage, processing, packaging, distribution and recall of the meatballs
 - food premises and equipment; for example, the design of the premises
- Primary production standards
 - primary production and processing standard for meat.

This question was poorly answered.

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

Standards for safe and hygienic food production ensure food produced is safe to consume (chapter 3, Food Standards Code).

Standards for microbial activity permitted within the food must be observed in order to ensure product is safe to consume.

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Question 2d.

Marks	0	1	2	3	Average
%	33	35	20	11	1.1

A suitable response could have included the following points.

- Most electricity used in manufacturing food products is generated by burning non-renewable resources, such as coal, oil and natural gas. These resources produce carbon dioxide when burnt, releasing greenhouse gases into the atmosphere.
- A large amount of energy from non-renewable resources is used throughout the whole production process for the meatballs; for example, refrigeration and mixers, cooking, packaging and labelling machinery. These non-renewable resources release greenhouse gases into the atmosphere.
- Trucks used to transport both raw ingredients to the manufacturer and the finished product to supermarkets release carbon dioxide into the atmosphere, adding to greenhouse gas emissions.

This question was not well answered.

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

The production of food requires enormous amounts of energy; from powering factory machinery to transporting ingredients and product to retail outlets. The energy required to power this production usually comes from non-renewable resources such as coal and natural gas. This is an environmental issue because not only does it deprive nature of finite resources that cannot be readily replenished, it also results in the production of excessive amounts of greenhouse gases such as methane and carbon dioxide. These gases contribute to the greenhouse effect whilst polluting the air and destroying the ozone layer.

Question 2e.

Marks	0	1	2	Average
%	28	41	31	1.1

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

- Ensure machinery is well maintained so it is operating as efficiently as possible.
- Check refrigeration equipment to make sure there are no leaks or broken seals.
- Install more energy-efficient equipment where possible.
- Make sure storerooms are operating at optimum temperatures and are not being overcooled, using unnecessary energy.
- Recover and reuse waste heat where possible, such as by heating work areas.
- Install solar panels to heat hot water.
- Investigate more energy-efficient modes of transport.

Question 3a.

Marks	0	1	2	3	Average
%	22	40	28	10	1.3

A suitable response could have been: Primary processing ensures that the fruit is safe to eat and reaches the consumer in peak condition; for example, harvesting the fruit when it is ripe, washing to remove any pesticides or herbicides, and then grading for size, shape and colour. Removing any fruit that is damaged, waxing to prevent deterioration of colour and to maintain crispness, storing in cool temperatures to delay the ripening process, and packing to prevent bruising and damage during distribution all maximise the quantity of good quality fruit that reaches the consumer or manufacturer, therefore increasing profitability for the producer. It also ensures that the manufacturer's reputation is maintained.

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

The primary processing of fruits such as apples and pears is important to producers because it renders their food safe to eat and allows them to send top quality fruit to the consumer. This is achieved by harvesting the fruit, washing any chemical residues off, sorting and grading them according to size and content as well as chilling them to slow the process of food spoilage to ensure the availability of fruit for future use.

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Question 3b.

Marks	0	1	2	3	Average
%	41	21	19	18	1.2

A suitable response could have included one of these ways in which salinity can occur.

- Irrigated-land salinity occurs through poorly managed irrigation systems that cause excess water to be added to groundwater supplies. This causes the watertable to rise, resulting in water and salt emerging through the topsoil. Salt crusts form on the surface of the soil, causing crops and fruit trees to die as a consequence of salty water in their root zones.
- Dry-land salinity occurs when land is cleared of trees and native grasses for farming to grow crops. Without trees, less water is removed from the watertable. This allows the watertable to rise and to bring salt to the surface. The sun evaporates water from the surface, leaving behind a salt crust on the land.

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

Dry-land salinity occurs when an area of land has been cleared of native trees and plants. Without trees to absorb water via their roots from the watertable found deep in the ground, the watertable will rise. The rising water brings with it mineral salts that form a crust on the surface of the land once the water has been evaporated by the sun. This renders the soil infertile and unusable.

Question 3c.

Marks	0	1	2	Average
%	31	42	26	1

A suitable response could have included two of the following sustainable farming practices.

- Use sensors to monitor the amount of water being applied to soil.
- Use laser-levelling to flood paddocks quickly and evenly.
- Maintain and repair water channels and levy banks to prevent loss of water.
- Enclose irrigation channels or use pipelines to prevent water evaporation.
- Use drip-irrigation systems rather than flood irrigation where possible.
- Monitor water quality on a regular basis.
- Capture water from open channels and dams so that it can be recycled and reused.
- Plant low-water or drought-resistant types of crops.

Question 3d.

Marks	0	1	2	Average
%	43	27	31	0.9

Microencapsulation is a process where an active or functional ingredient, such as iron, is packaged in a minute capsule formed from a fine film of food-grade material.

Question 3e.

Marks	0	1	2	3	4	Average
%	29	21	27	13	9	1.5

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

- Masks the flavour of core ingredients that may be unappealing to consumers; for example, iron or omega-3 in bread products.
- Allows some ingredients/nutrients, such as omega-3, to be distributed evenly throughout a bread dough without interfering with other ingredients such as raising agents.
- Allows for controlled release of particular ingredients in baked products; for example, leavening agents in bread can be microencapsulated to only allow them to be released when the baked loaf reaches a predetermined temperature during baking.
- Enables sensory properties of food products to be enhanced; for example, it allows the flavour and colour pigments in jelly beans to be stabilised to prevent them being diluted by liquids during the manufacturing process.

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

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The capsules are minute, meaning they cannot be seen and their contents cannot be tasted in the food. Omega 3 from fish can be added to bread without altering the flavour and this will appeal to more consumers and offer the health benefits of the nutrients after time on the shelf and increase sales and profit.

Microencapsulation also allows manufacturers to control the release of the core material, for example the flavour molecules in chewing gum are encapsulated to provide a longer lasting taste for consumers.

Question 4a.

Marks	0	1	2	3	Average
%	19	16	29	35	1.8

A suitable response could have included three of the following physical properties of a fresh raw egg.

- two distinct whites – thick and thin
- more thick white than thin white
- high dome on the yolk
- small air sac when shell is cracked
- firm membrane around the yolk
- porous shell, oval in shape

Question 4b.

Marks	0	1	2	Average
%	71	19	10	0.4

A suitable explanation could have been: Eggs are considered a high-risk food due to their high protein content. Eggs contain protein and this protein allows food-poisoning bacteria to grow more quickly, because the protein acts as a food source. The shell of the egg is porous and can allow bacteria to enter the egg.

This question was very poorly answered.

Question 4c.

Marks	0	1	2	3	Average
%	61	19	14	7	0.7

A suitable response could have included the following points.

- The functional property of eggs used in mayonnaise is emulsification.
- An emulsification is the stable suspension of fat and water. The egg yolk contains lecithin, which has the ability to help the oil and vinegar in the mayonnaise to combine without separating.

One mark was allocated for the identification of the functional property; two marks were allocated for the description.

This question was poorly answered.

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

The role eggs play in mayonnaise preparation is one of emulsification. The egg yolk contains lecithin that has the ability to prevent the oil and vinegar from separating. This allows a thick creamy and smooth textured mayonnaise.

Question 4d.

Marks	0	1	Average
%	80	20	0.2

Local government

Question 4e.

Marks	0	1	2	Average
%	26	38	35	1.1

A suitable response could have been: It is important to develop a HACCP system when producing mayonnaise commercially because there is a high risk because of the egg yolk. The HACCP system examines each stage of the production and identifies any areas where hazards may occur, therefore reducing the risk of unsafe food reaching the consumer.

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Question 4fi. and 4fii.

Marks	0	1	2	3	4	Average
%	9	13	33	24	21	2.4

A suitable response could have included the information in the table below.

Step in production	Potential hazard	Corrective action
<i>delivery of the eggs</i>	Eggs may be past the best-before date.	<ul style="list-style-type: none"> Discard eggs that have been delivered past the best-before date or return to the supplier. Do not accept any cartons of eggs past their best-before date.
	Eggs may have cracked shells.	<ul style="list-style-type: none"> Return any cracked eggs to the supplier. Discard any eggs that have cracked shells.
<i>storage of the prepared mayonnaise</i>	Mayonnaise has not been stored in the refrigerator or has been stored at a temperature above 5 °C or the refrigerator may not be functioning correctly.	<ul style="list-style-type: none"> Store mayonnaise in a refrigerator at or below 5 °C at all times. Use an external thermometer to monitor the temperature. Maintain a temperature log of refrigerator. Call someone to check and repair the refrigerator. Discard any mayonnaise not stored below 5 °C.
	The packaging containing the mayonnaise is damaged and is no longer airtight.	<ul style="list-style-type: none"> Decant the mayonnaise into a new airtight container.
	The mayonnaise is not in an airtight container.	<ul style="list-style-type: none"> Place the mayonnaise in an airtight container.

Question 5a.

Marks	0	1	2	Average
%	37	27	36	1

The term 'complex process' refers to a process that contains steps where decisions need to be made. Each decision can directly affect the overall outcome of the completed food item. It involves the selection of suitable techniques and tools at each step and their correct application.

Question 5bi. and 5bii.

Marks	0	1	2	3	4	Average
%	13	19	31	25	13	2.1

A suitable response could have included any two of the following steps and their explanations and descriptions.

Step: 1

Explanation: The ingredients will come together and form a soft dough that will be slightly moist to touch. There will be no flour left in the base of the bowl.

Description: Forming a soft dough with the warm water will enable the yeast to start to ferment so that the finished loaf will be well risen.

Step: 2

Explanation: The dough must be kneaded until it is smooth and elastic. The dough should spring back when lightly touched with a finger.

Description: Kneading the dough helps to develop a strong network of gluten that can trap the gas bubbles produced during fermentation and evenly distribute them throughout the dough. This will result in a loaf of bread that has an even texture.

Step: 3

Explanation: The dough will be well risen and will have doubled in size. The carbon dioxide produced during fermentation will cause the plastic wrap to form a 'dome' over the bowl.

Description: The proven loaf of bread will be well risen and will have a light and airy texture.

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Step: 4

Explanation: When fully baked the bread loaf will be well risen, have a golden-brown colour, will shrink slightly from the sides of the tin and will sound hollow when tapped.

Description: Baking the loaf in the hot oven enables the dough to develop a firm crust that will hold its shape. It will also be golden brown in colour because of the glaze, and have a soft texture and an appealing yeasty aroma.

For each of the two steps chosen, one mark was allocated for the explanation and one mark for the description.

Question 5c.

Marks	0	1	2	3	Average
%	9	18	39	34	2

A suitable response could have included any three of the following conditions.

- food (sugar)
- moisture (water)
- warmth
- time

Question 5d.

Marks	0	1	2	Average
%	69	20	12	0.5

A suitable response could have been: During baking, the air is heated and the hot air rises and forces the cooler air at the top of the oven to move down to lower areas where it is heated and then rises again. This movement of air creates a convection current.

This question was not answered well.

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

The air heated by the element or gas flame becomes very hot and rises to the top of the oven where it forces the cooler air down to the bottom where it is heated and rises again. This is repeated and convection currents are formed.

Question 5e.

Marks	0	1	2	Average
%	38	19	43	1.1

A suitable response could have included a combination of the following points.

- A quantitative analysis would use techniques that measure features such as size or height, weight, volume, density of crumb, colour, shelf life and nutrient content.
- This quantitative analysis will provide a benchmark against which the new product can be compared; for example, the height of the bread loaves.

Question 5f.

Marks	0	1	2	Average
%	28	50	22	1

A suitable response could have included the following: When bread is frozen in an airtight container or bag, it is stored at very low temperatures, around -18°C . These low temperatures prevent microbial growth from occurring. The chemical and enzymatic changes that cause bread to go stale are slowed, preserving the bread for future use.

Question 6

Marks	0	1	2	3	4	5	6	7	8	Average
%	23	15	15	14	11	9	6	4	2	2.6

Students needed to demonstrate understanding of two methods of modified atmosphere packaging (MAP) systems and how MAP systems preserve food products. The advantages of this system to both the consumer and the manufacturer also needed to be discussed.

A suitable response could have included some of the following information.

- Modified atmosphere packaging is a packaging system that changes the atmosphere or gas inside a food package.

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- It is used to extend the shelf life of food by retarding the microbial growth that naturally leads to food spoilage.
- MAP systems use a variety of gases – such as oxygen, carbon dioxide or nitrogen – in different concentrations inside the packaging, depending on the food that is being packaged. Each of the gases has a specific role in preventing food spoilage. For example, carbon dioxide inhibits the growth of mould and bacteria, while oxygen can be used to help food, such as meat, to maintain its natural colour.
- Food that is packaged in a MAP system can also be protected from chemical contamination and exposure to light, oxygen and water vapour.

There are several methods of MAP packaging. Students needed to describe two methods, such as:

- barrier-specific packaging
- vacuum packaging
- gas packaging or flushing
- active packaging.

MAP packaging provides a wide range of advantages for both producers and consumers, such as:

- extending the shelf life of food and reducing spoilage of foods minimises waste for the producers
- provides producers with more options for transporting food long distances
- some producers are able to extend the season for some fruits by packaging them at the peak of their season
- packaged foods reach consumers in optimum condition and keep for longer periods.

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

Map packaging is the removal, addition or alteration of the amount atmosphere or gas within a food package, from air. It extends the shelf-life of the food by retarding food spoilage while it is packaged. For example, oxygen often causes food to brown e.g. cut apples, or potato crisps to soften resulting in undesirable sensory properties. Map packaging allows the oxygen to be removed and/or replaced with another gas such as carbon dioxide or nitrogen. There are four methods of MAP packaging. Vacuum packaging is one method. This is when oxygen/air is removed from the packaging. This causes the packaging to be wrapped tightly around the food item and then it is sealed. Without air/oxygen in the packaging, no micro-organisms can grow on the food, as many micro-organisms require oxygen to produce. Moisture is also removed. Vacuum packaging can be used for meat products like salami, fresh noodles and cheeses.

Another form of MAP packaging is when a range of gases that suit each different food are added to the package as it is sealed. This method is called Gas packaging or gas flushing. Extra oxygen is added to meat to help it keep its red colour. Nitrogen replaces oxygen in potato crisps to keep them fresh and to fill the bag to prevent crushing when they are transported.

MAP packaging is a good option for producers as it is usable for many different food items, despite their shapes and sizes. It allows manufacturers more time to get the food to the consumers without food items being spoiled. This type of packaging also protects the food items, making it a safer and easier way to transport the food items to shops. The MAP packaged foods also look good, the food inside can be seen in lots of cases like fresh pasta and this may encourage consumers to buy their product.

Some advantages of MAP packaging for the consumer include the fact that the product they are buying is less likely to be damaged when they receive it. The food items will be at their peak in sensory properties and more able to be kept at home for a longer period of time before the food becomes spoiled. There are less preservatives needed with this type of packaging and this will suit many people especially mothers buying food for their children.

Overall MAP packaging is an excellent technique that ensures that the food items maintain their quality and ensures that the food is safe to consume. It caters for many different types of foods and combinations like biscuit and cheese snack packs and salad mixes.