



FOOD SCIENCE AND TECHNOLOGY

ATAR course examination 2017

Marking Key

Marking keys are an explicit statement about what the examining panel expect of candidates when they respond to particular examination items. They help ensure a consistent interpretation of the criteria that guide the awarding of marks.

Section One: Multiple-choice

15% (15 Marks)

Question	Answer
1	a
2	a
3	b
4	c
5	d
6	c
7	c
8	b
9	d
10	a
11	a
12	d
13	b
14	c
15	b

Section Two: Short answer

55% (87 Marks)

Question 16

(10 marks)

- (a) Name the State legislation that ensures food sold in Western Australia is safe for human consumption. (1 mark)

Description	Marks
Names the State legislation	1
Total	1
The <i>Food Act 2008</i> (WA)	

- (b) Identify **two** potential critical control points in the production and sale of the chicken sushi, explaining **one** way of controlling each of them. (6 marks)

Description	Marks
For each of the two critical control points:	
Identifies the critical control point	1
Explains a way to control, including the action taken and the reason for the action	2
Explains a way to control, including the action taken	1
Total	3
Answers may include, but are not limited to the following:	
Critical control point	Explanation
Receiving or delivery	<ul style="list-style-type: none"> check packaged ingredients for damage when received this will identify any possible contamination or <ul style="list-style-type: none"> perishable ingredients need to be transported within the correct temperature zone food spoilage is reduced at temperature below 5°C and/or food stored above 5°C can become spoilt or <ul style="list-style-type: none"> check that all perishable items are not past their use-by date items past their use-by date should not be used
Storage of ingredients	<ul style="list-style-type: none"> refrigerate rice, chicken, cut vegetables storing below 5°C slows the growth of microorganisms that cause food spoilage or <ul style="list-style-type: none"> store raw rice, nori, sauces in a cool, dry place this avoids infestation by insects and/or rodents
Preparation	<ul style="list-style-type: none"> wash hands correctly, or ensure kitchen space is cleaned correctly, or ensure equipment being used is clean, or ensure separate equipment is used in the preparation of raw chicken and ready to eat foods to avoid the transfer of microorganisms or other contamination into the food product

Question 16 (continued)

Critical control points	Explanation
Cooling	<ul style="list-style-type: none"> ensure chicken and rice are covered during cooling this prevents contamination from the environment or <ul style="list-style-type: none"> ensure a correct cooling method is used for cooling the chicken cooked meats need to be cooled to 5°C within 2 hours
Transportation	<ul style="list-style-type: none"> ensure sushi is stored below 5°C during transportation to farmers market storing below 5°C slows the growth of microorganisms that cause food spoilage
Storage of final product	<ul style="list-style-type: none"> ensure sushi is stored in an appropriately-sealed package this prevents contamination from the environment or <ul style="list-style-type: none"> ensure sushi is stored below 5°C storing below 5°C slows the growth of microorganisms that cause food spoilage
Sale of the final product	<ul style="list-style-type: none"> maintain the storage environment at the point of sale to below 5°C foods stored above 5°C increases risk of food spoilage or <ul style="list-style-type: none"> sushi kept within the danger zone, 5°C–60°C, for longer than 2 hours must be disposed of appropriately to ensure consumers receive a product safe for consumption (less than 5°C slows growth of microorganisms and above 60°C destroys microorganisms)

- (c) The farmers' market is open from 9 am to 1 pm. Explain a monitoring requirement Jason will need to implement during the sale of the chicken sushi. (3 marks)

Description	Marks
Explains in detail the monitoring requirement, including a reason for the requirement	3
Explains the monitoring requirement	2
States a monitoring requirement	1
Total	3
Answers may include, but are not limited to the following:	
Monitoring requirements:	
<ul style="list-style-type: none"> cooked and prepared sushi is stored and maintained in a chilled environment through the use of a chiller box or refrigeration on a powered site foods used are classed as high risk food, making them more susceptible to bacterial growth bacteria growth is optimised in moist, warm environments 	
<ul style="list-style-type: none"> regular checks are carried out to ensure the correct temperature is maintained thermometers are used during the check and the temperature and time are recorded regularly ensure that bacteria do not have sufficient time to grow 	
<ul style="list-style-type: none"> packages are sealed correctly/securely bacteria require oxygen for growth incorrect packaging could cause contamination 	
<ul style="list-style-type: none"> note time and date on packaging of sushi on display chicken sushi on display for long periods will be within the danger zone food left in the danger zone encourages bacterial growth 	

Question 17

(12 marks)

- (a) Complete the table below that collates the recipes and costs the meal per serve for Rashid's family. Some of the items have been done for you. (8 marks)

Description		Marks
Identifies/converts/calculates seven items missing from quantity and cost columns		1–7
Calculates cost per serve (based on candidate's costing for all ingredients)		1
Total		8
Ingredients required	Quantity	Cost \$
spaghetti pasta	250 g	1.00
beef mince	400 g	4.00
eggs	4 (1)	2.20 (1)
olive oil	1 tablespoon	0.35 (1)
onion	1	0.35
tinned tomatoes	400 g	0.75
Parmesan cheese	50 g	1.22
pitted dates	125 g	0.45
butter	60 g	0.43
brown sugar	90 g	0.22
vanilla essence	1 teaspoon (1)	0.06 (1)
self-raising flour	100 g	0.28
milk	250 ml (1)	0.37 (1)
caster sugar	20 g	0.07
Pantry items: garlic, dried herbs, Dijon mustard, salt, sea salt, black pepper, bicarbonate of soda, cornflour, balsamic vinegar, breadcrumbs		2.00
Total cost		13.75
Cost per serve for Rashid's family meal (rounded to nearest cent)		3.44 (1)

Question 17 (continued)

- (b) Rashid's sister has brought two friends home for dinner. Make and justify **two** adaptations that could be made to the recipes to feed the two extra people without increasing the cost of the meal significantly. (4 marks)

Description		Marks
For each of the two adaptations:		
Suggests an adaptation and justifies how it will not significantly increase cost		2
Suggests an adaptation		1
Total		4
Answers may include, but are not limited to the following:		
Adaption	Justification	
Add grated vegetables such as carrot or zucchini	<ul style="list-style-type: none"> carrot and zucchini cost less per kilogram than beef mince provides more bulk to the meatballs 	
Make the meatballs smaller	<ul style="list-style-type: none"> reducing the size of the meatballs means that more meatballs are made for the same cost reduce the portion size for each person 	
Use home brand ingredients	<ul style="list-style-type: none"> home brand ingredients are cheaper than name brand use caged eggs instead of free range 	
Increase the pasta per serve	<ul style="list-style-type: none"> pasta is low in cost a larger serve of pasta will ensure that the portions are not too small 	
Lower grade mince	<ul style="list-style-type: none"> lower grade mince is a cheaper product 	

Question 18

(14 marks)

- (a) Explain how the *Occupational Safety and Health Act 1984* safeguards both employers and employees. (6 marks)

Description		Marks
For each of the two explanations:		
Explains the OSH Act safeguard and how it provides protection for the party		3
Explains the OSH Act safeguard		2
Makes a relevant statement about an OSH safeguard		1
Total		3
Answers may include, but are not limited to the following:		
Employers	<ul style="list-style-type: none"> • implements safety standards that employers must put in place for all employees • employers found to be in breach of OSH can be fined or prosecuted <p>or</p> <ul style="list-style-type: none"> • outlines reasonable precautions and how to exercise proper diligence to ensure employer obligations are met 	
Employees	<ul style="list-style-type: none"> • provides a safe and secure workplace • minimises risk of injury by having correct procedures and policies in place in each workplace • attendance at training programs to minimise risk of injury or accident <p>or</p> <ul style="list-style-type: none"> • promotes and secures the safety of persons at work • protect persons at work against harm and/or hazards <p>or</p> <ul style="list-style-type: none"> • reduces, eliminates and controls workplace hazards • helps employers to identify workplace hazards that could harm employees 	

Question 18 (continued)

- (b) Describe **one** social and **one** economic consequence of the unsafe work environment for both Ali and her employer. (8 marks)

Description	Marks
For each description for employer and employee:	
Describes a social consequences of the unsafe work environment	2
Makes a statement about social consequences of the unsafe work environment	1
Subtotal	2
Describes an economic consequences of the unsafe work environment	2
Makes a statement about economic consequences of the unsafe work environment	1
Subtotal	2
Overall total	8
Answers may include, but are not limited to the following:	
<p>Social consequences</p> <p>For Ali:</p> <ul style="list-style-type: none"> impacts on her lifestyle due to any limitations she experiences through the loss of part of her finger impacts on her family and friends who may need to care for her during her recovery psychological impact of coming to terms with losing part of her finger fear of backlash from her employer of reporting the unsafe practice feeling unsafe at work might reduce her morale and she may not want to be at work; this could lead to mental health issues <p>For Ali's employer:</p> <ul style="list-style-type: none"> low workforce morale if employees feel unsafe at work loss of reputation or poor corporate image if non-compliance with OSH practices becomes known <p>Economic consequences</p> <p>For Ali:</p> <ul style="list-style-type: none"> temporary loss of income during recovery period or might be reliant on welfare or workers' compensation during this period long-term loss of income if her injury affects her ability to work range of jobs available to her might be affected; this could lead to reduced income <p>For Ali's employer:</p> <ul style="list-style-type: none"> finances and possible imprisonment if found to be not following the OSH Act low productivity from a workforce with low morale affects profit costs associated with paying the injury sustained by an employee high compensation costs if the employer is deemed to be negligent loss of reputation could result in fewer customers using the business and a resultant loss of profit 	

Question 19

(6 marks)

Describe how **each** of the following factors influence health and wellbeing:

- gender
- race
- family history.

Description		Marks
For each of the three factors of gender, race and family history:		
Describes how the factor influences health and wellbeing		2
Identifies an influence to health and wellbeing		1
Total		6
Answers may include, but are not limited to the following:		
Gender	<ul style="list-style-type: none"> • men require more protein than women • men have more muscle mass and require increased protein than women or <ul style="list-style-type: none"> • women require more iron than men • menstruation and birth mean women have increased iron requirements 	
Race	<ul style="list-style-type: none"> • race may predispose individuals to certain conditions • certain races have a higher incidence of diabetes 	
Family history	<ul style="list-style-type: none"> • family history may predispose individuals to the possible risk of developing a disease such as cardiovascular disease, obesity, diabetes, high blood pressure and high cholesterol levels • an individual can use family history to look at ways to reduce risk through modifications to lifestyle, diet and exercise 	

Question 20

(11 marks)

- (a) Identify **one** farming practice used in Australia and describe **two** impacts it has on the sustainability of food production in Australia. (5 marks)

Description		Marks
Identifies a farming practice		1
Subtotal		1
For each of the two impacts of the farming practice:		
Describes an impact of the farming practice		2
States a relevant fact about the farming practice		1
Subtotal		4
Overall total		5
Answers may include, but are not limited to the following:		
Farming practice	Impact on food production	
Intensive farming	<ul style="list-style-type: none"> • a short term farming method • unsustainable for future generations or • ensures large yields in small spaces • results in land degradation or • control over the environment through use of poisons • risk of ingesting poisons 	
Organic farming	<ul style="list-style-type: none"> • preservation of soil • ensures there is soil to grow produce in the future or • grows crops without harmful chemicals • less risk from ingesting poisons for consumers or • grows food in season • food might not be available all year round; consumers have become accustomed to foods being available all year 	

- (b) Identify **two** water availability concerns in Australia and describe strategies to manage water availability to ensure sustainable food production. (6 marks)

Description		Marks
For each of two water concerns:		
Identifies a concern		1
Subtotal		2
For each of two water concerns:		
Describes how the strategy would manage sustainable food production		2
States a relevant fact about the strategy		1
Subtotal		4
Overall total		6
Answers may include, but are not limited to the following:		
Water concern	Management strategy	
Drought	Links the following points to sustainable food production: <ul style="list-style-type: none"> • use multiple paddocks to rotate stock to prevent over-grazing from livestock • reduce daily demand for water • drought affects whole communities and localities; seek government funding for drought relief projects • agreement on neighbouring properties when drought occurs • proactive rather than reactive planning is important in order to save water for drought times • reuse of water through capturing run-off in channels and dams • irrigation equipment that require less water to grow crops 	
Salinity	Links the following points to sustainable food production: <ul style="list-style-type: none"> • monitor water quality regularly to test for salinity • GPS for laser levelling, to flood paddocks quickly • drip-irrigation systems controlled and monitored by computer systems to deliver exact quantities of water for optimal plant growth • maintain and repair breaks in water channels and banks to avoid water loss • enclose open-channel irrigation systems to prevent evaporation • use of pipelines to prevent evaporation • irrigation plans and layout that avoid watering unnecessary sections • installation of sensors to monitor soil moisture to determine amount of water needed • use of heavy clay soils to minimise seepage of irrigation water into the water table 	
Contamination of groundwater supplies	Links the following points to sustainable food production: <ul style="list-style-type: none"> • reduce the use of herbicides and pesticides on crops • ensure correct disposal of potentially toxic substances • use natural or organic herbicides and pesticides • use of groundwater monitoring systems to check contamination levels 	

Question 21

(12 marks)

- (a) Identify **two** trends indicated by the data below. Provide a possible reason for each trend. (4 marks)

Description		Marks
For each of two trends:		
Identifies the trend		1
Subtotal		2
For each of two trends:		
Suggests a possible, logical reason for the trend		1
Subtotal		2
Overall total		4
Answers may include, but are not limited to the following:		
Trend	Suggestion	
Females avoiding foods due to allergies or intolerances is higher across all age groups	<ul style="list-style-type: none"> females are more likely to seek medical advice than males females are more likely to follow what is on trend in the media in relation to diet 	
Food avoidance increases as groups age	<ul style="list-style-type: none"> as males and females age their education and knowledge about their own bodies and allergies and/or intolerances increase a person is more likely to avoid reactive foods if they know more about them people can become lactose intolerant as they age misdiagnosis in the younger years, where people may not have known about their intolerance or allergy 	
Largest difference between males and females is in the 51–70 age group	<ul style="list-style-type: none"> females in this age group are more likely to seek advice than males in this age group based on their symptoms 	
Largest increase for females occurs between 2–18 and 19–30 years	<ul style="list-style-type: none"> females in the 19–30 age group gain autonomy and begin to make their own life choices females in the 19–30 age group are no longer confined to the constraints of the family structure females in the 19–30 age group are more likely to follow what is on trend in the media in relation to diet 	
Percentage of males avoiding food across all age groups is between 11–17%	<ul style="list-style-type: none"> males may be less susceptible to allergies or intolerances males may be more willing to ignore medical symptoms and not seek medical advice from health care professionals 	
The difference in females between 2–18 and 51–70 years almost doubles in percentage	<ul style="list-style-type: none"> females in the 51–70 age group have more awareness of self as they have lived longer and may be more aware of their personal needs females in the 51–70 age group are more likely to seek medical advice from health care professionals as they may be more concerned for their health due to age and health and diet-related diseases linked with aging females in the 51–70 age group are more in control of own life and self in comparison to age 2–18 years 	

(b) Describe each of the following conditions:

- lactose intolerance
- coeliac disease.

(4 marks)

Description		Marks
For each of the two conditions:		
Describes the condition in detail		2
Provides a limited description of the condition		1
Total		4
Answers may include, but are not limited to the following:		
Condition	Description	
Lactose intolerance	<ul style="list-style-type: none"> • the body requires the enzyme lactase to digest lactose; without sufficient lactase the body does not break down all of the lactose • undigested lactose passes through the small intestine to the colon • natural bacteria ferment the lactose and produce acids and gas • symptoms include abdominal pain, bloating or diarrhoea 	
Coeliac disease	<ul style="list-style-type: none"> • an autoimmune disease in which the immune system reacts abnormally to gluten • causes damage to the small bowel • villi in the bowel become inflamed and flattened • inflammation of the villi reduces the surface area of the bowel for nutrient absorption which can lead to various gastrointestinal and malabsorption symptoms 	

(c) Complete the table below.

(4 marks)

Description		Marks
For each of the two conditions:		
Identifies an ingredient to be modified		1
Identifies a suitable modification		1
Total		4
Answers may include, but are not limited to the following:		
Condition	Ingredients to be modified	Suitable modification
Lactose intolerance	tasty cheese	<ul style="list-style-type: none"> • soy cheese • cashew/nut cheese
	milk	<ul style="list-style-type: none"> • nut milks—almond, hazelnut • soy milk • rice milk • coconut milk
	butter	<ul style="list-style-type: none"> • olive oil based margarine • Nutlex margarine
Coeliac disease	pasta sheets	<ul style="list-style-type: none"> • gluten-free pasta • zucchini noodles
	plain flour	<ul style="list-style-type: none"> • gluten-free flour • arrowroot flour • buckwheat flour • quinoa flour • rice flour

Question 22

(13 marks)

- (a) Identify the macronutrients found in the ham, cheese, salad and white bread roll. (3 marks)

Description	Marks
For each of three macronutrients:	
Identifies the macronutrient	1–3
Total	3
Macronutrients	
<ul style="list-style-type: none"> • carbohydrate • protein • fat or lipids 	

- (b) Describe **two** phases of mechanical and **three** phases of chemical digestion of the white bread roll. (10 marks)

Description	Marks
For each of the two phases of mechanical digestion:	
Describes mechanical digestion	2
States a fact about mechanical digestion	1
Subtotal	4
For each of the three phases of chemical digestion:	
Describes chemical digestion	2
States a fact about chemical digestion	1
Subtotal	6
Overall total	10
Answers may include, but are not limited to the following:	
Mechanical digestion	
Mouth: Chewing food into smaller pieces breaks it down into smaller pieces for digestion	
Digestive tract: Peristalsis is responsible for the movement of food through the digestive tract	
Chemical digestion	
Mouth: Salivary amylase begins to breakdown the carbohydrate or converts starch into sugar Ptyalin begins to digest cooked starch	
Stomach: Gastric juices containing hydrochloric acid break down all food to a thick liquid known as chyme Proteins are broken down to peptides	
Small intestine: Amylase secreted by the pancreas breaks down carbohydrate to glucose Lipase breaks down lipids to fatty acids and glycerol Protease/proteolytic enzyme/pepidase/proteinase breaks down protein to amino acids	

Question 23

(9 marks)

- (a) Explain the purpose of the *Australian Association of National Advertisers (AANA) Code for Advertising and Marketing Communications to Children*. (3 marks)

Description	Marks
Explains in detail the purpose of the code	3
Provides a limited explanation of the code	2
States a relevant fact about the code	1
Total	3
Answers may include, but are not limited to the following:	
<ul style="list-style-type: none">• is a self-regulatory code regulated by the advertising, marketing and media industry• recommends that advertisers and marketers develop and maintain a high sense of social responsibility in advertising and marketing to children in Australia• protects Australian children from exposure to inappropriate advertising and marketing	

Question 23 (continued)

- (b) Describe **three** Codes of Practice contained in the *AANA Code for Advertising and Marketing Communications to Children*. (6 marks)

Description		Marks
For each of three Codes of Practice:		
Describes the Code of Practice		2
States a relevant fact about the Code of Practice		1
Total		6
Answers may include, but are not limited to the following:		
Code of practice	Description	
Prevailing community standards	<ul style="list-style-type: none"> advertising or marketing communications to children must not contravene prevailing community standards 	
Factual presentation	<ul style="list-style-type: none"> must not mislead or deceive children must not be ambiguous must accurately represent, in a manner that is clearly understood by children presents the need for and the price of any accessory parts indicates the advertising or marketing communication is in fact a commercial communication rather than program content, editorial comment or other non-commercial communication 	
Placement	<ul style="list-style-type: none"> advertising or marketing communication to children must not be placed in media where editorial comment or program content, in close proximity to that communication, or directly accessible by children as a result of the communication, is unsuitable for children according to prevailing community standards 	
Sexualisation	<ul style="list-style-type: none"> must not employ sexual appeal must not include sexual imagery must not state or imply that children are sexual beings and that ownership or enjoyment of a product will enhance their sexuality 	
Safety	<ul style="list-style-type: none"> must not portray images or events which depict unsafe uses of a product or unsafe situations which may encourage children to engage in dangerous activities or create an unrealistic impression in the minds of children or their parents or carers about safety must not advertise products which have been officially declared unsafe or dangerous by an authorised Australian Government authority 	
Social values	<ul style="list-style-type: none"> must not portray images or events in a way that is unduly frightening or distressing to children must not demean any person or group on the basis of ethnicity, nationality, race, gender, age, sexual preference, religion or mental or physical disability 	
Parental authority	<ul style="list-style-type: none"> must not undermine the authority, responsibility or judgment of parents or carers must not contain an appeal to children to urge their parents, carers or another person to buy a product for them must not state or imply that a product makes children who own or enjoy it superior to their peers must not state or imply that persons who buy the product are more generous than those who do not 	

Code of practice	Description
Qualifying statements	<ul style="list-style-type: none"> any disclaimers, qualifiers or asterisked or footnoted information used in advertising or marketing communications to children must be conspicuously displayed and clearly explained to children
Competitions	<ul style="list-style-type: none"> contain a summary of the basic rules for the competition clearly include the closing date for entries make any statements about the chance of winning clear, fair and accurate
Popular personalities	<ul style="list-style-type: none"> advertising or marketing communication to children must not use popular personalities or celebrities (live or animated) to endorse, recommend, promote or advertise or market products or premiums in a manner that obscures the distinction between commercial promotions and program or editorial content
Premium	<ul style="list-style-type: none"> must not create a false or misleading impression in the minds of children about the content of the product must be presented conspicuously must not create a false or misleading impression in the minds of children that the product being advertised or marketed is the premium rather than the product must not refer to the premium in more than an incidental manner to the advertised product must make the terms of the offer clear as well as any conditions or limitations must not use premiums in a way that promotes irresponsible use or excessive consumption of the product
Alcohol	<ul style="list-style-type: none"> advertising or marketing communication to children must not be for, or relate in any way to, alcohol products or draw any association with companies that supply alcohol products
Privacy	<ul style="list-style-type: none"> if an advertising or marketing communication indicates that personal information in relation to a child will be collected, or, if as a result of an advertising and marketing communication, personal information of a child will or is likely to be collected, then the advertising or marketing communication must include a statement that the child must obtain a parent or guardian's express consent prior to engaging in any activity that will result in the collection or disclosure of such personal information personal information is information that identifies the child or could identify the child
Food and beverages	<ul style="list-style-type: none"> advertising or marketing communication to children for food or beverages must neither encourage nor promote an inactive lifestyle or unhealthy eating or drinking habits advertising or marketing communication to children must comply with the AANA Food & Beverages Advertising and Marketing Communications Code
AANA code of ethics	<ul style="list-style-type: none"> advertising or marketing communication to children must comply with the AANA Code of Ethics

Section Three: Extended answer

30% (40 Marks)

Question 24

(20 marks)

- (a) Define genetic modification and identify **one** way in which it is used in food production. (2 marks)

Description		Marks
Defines the term genetic modification		1
Identifies why it is used in food production		1
Total		2
Answers may include, but are not limited to the following:		
Definition	Identify	
genetically altered in a way that does not occur naturally or through conventional breeding	used to improve yield or nutritional value or sensory properties	

- (b) Explain **two** possible risks of the genetic modification of food. (6 marks)

Description		Marks
For each of the two possible risks of genetic modification:		
Explains how and why it is a risk		3
Explains how or why it is a risk		2
States a relevant fact		1
Total		6
Answers may include, but are not limited to the following:		
Risk	Explanation	
Impact on health	<ul style="list-style-type: none"> no long term studies on genetically modified foods have been conducted, short term research is not conclusive enough to identify health risks future health implications are yet to be seen 	
Impact on environment	<ul style="list-style-type: none"> genetically modified seeds or plants can be made resistant to herbicides or pesticides excessive use of herbicides on plants can enter the environment excessive use of herbicides can increased weed tolerance to herbicides 	
	<ul style="list-style-type: none"> pesticide-producing plants may kill other species of insects may leave pesticide residue in the soil original pest may be replaced with another 	
Antibiotic resistance	<ul style="list-style-type: none"> when genetically modifying plants, antibiotic resistant genes are commonly used may lead to antibiotic resistance in the animals and/or humans who eat the food products 	

- (c) Identify **three** technologies used to develop new food products, excluding genetic modification. Describe each technology, giving an example of a food product in which it is used. (12 marks)

Description		Marks
For each of the three forms of technology:		
Identifies the technology		1
Subtotal		3
Describes how the technology can produce a product of benefit to consumers		2
Provides a limited description about how the technology can produce a product of benefit to consumers		1
Subtotal		6
Provides an example of a food product in which it is used		1
Subtotal		3
Overall total		12
Answers may include, but are not limited to the following:		
Technology	Description	Food product
Micro-encapsulation	<ul style="list-style-type: none"> the flavour of the added ingredient can be masked allowing the production of a product that would be acceptable to consumers 	Any one of the following: <ul style="list-style-type: none"> baby food or bread or yoghurt or yellow table spread or breakfast cereal or cheese or milk enriched with omega-3 milk or fruit juice fortified with iron jelly beans chewing gum
	<ul style="list-style-type: none"> the release of the added ingredient can be controlled products can be produced that have longer-lasting taste 	
	<ul style="list-style-type: none"> stabilises the colouring ingredients used in food a final product with improved sensory properties 	
High pressure processing	<ul style="list-style-type: none"> processing can occur at room temperature or chilled rather than at high temperatures this prevents the aroma or flavour or colour or texture or nutrient content from being affected 	Any one of the following: <ul style="list-style-type: none"> fruit juice sliced or precooked meats fruit purees vegetable dips fresh curd cheese
	<ul style="list-style-type: none"> the high pressure can destroy yeasts or moulds which cause food to spoil resulting in a longer shelf life 	
	<ul style="list-style-type: none"> pressure is applied evenly to the product this prevents the shape or texture of the food being affected 	
	<ul style="list-style-type: none"> the product does not require chemical preservatives consumers can purchase foods without preservatives 	

Question 24 (c) (continued)

Technology	Description	Food product
Membrane technology	<ul style="list-style-type: none">• can enhance the nutrient content of milk• provides consumers with a health benefit of reduced fat or increased calcium or protein	Any one of the following: <ul style="list-style-type: none">• low fat dairy products• increased protein milk.• increased calcium milk• tomatoes• fruit or vegetable juices• concentrated fruit or vegetable juice• raw milk products• maple syrup

Question 25

(20 marks)

- (a) Explain, using an example, **one** ethical issue that influences individuals' food consumption patterns. (4 marks)

Description		Marks
Identifies one ethical issue		1
Subtotal		1
Explains how the ethical issue influences individual food consumption patterns		2
States a relevant fact		1
Subtotal		2
Provides an example		1
Subtotal		1
Total		4
Answers may include but are not limited to the following:		
Ethical issue	Explanation	Example
Fair trade	<ul style="list-style-type: none"> • alternative approach to normal trade practices and is based on a partnership between the producer and the consumer • allows workers the opportunity to improve their lives especially in developing countries • consumers want to ensure producers are paid fairly for their products • this would lead consumers to seek out fair trade products/increase demand for fair trade products 	Any one of the following: <ul style="list-style-type: none"> • coffee • chocolate • tea • vanilla
Animal welfare	<ul style="list-style-type: none"> • consumers are sympathetic towards animals and do not like the thought of them being harmed for our food needs • this would lead to consumers choosing to eat less meat to ensure there is no cruelty to animals • this would lead to consumer-demand for better conditions for animals • this has caused food producers to market more 'free-range' products 	Any one of the following: <ul style="list-style-type: none"> • free range chickens or eggs • sow stall-free pigs • free-range beef • ethically sourced seafood such as dolphin-friendly tuna

Question 25 (continued)

- (b) Describe how **two** Australian Government policies influence food consumption patterns. (6 marks)

Description		Marks
For each of two Australian Government policies:		
Identifies the policy		1
Subtotal		2
For each government policy:		
Describes the policy and how it influences food consumption		2
Describes the policy		1
Subtotal		4
Overall total		6
Answers may include, but are not limited to the following:		
Political policy	Influence on food consumption	
Free trade agreements	<ul style="list-style-type: none"> open up opportunities for exports and increase the quantity of imported goods consumers have increased access to more ethnic and imported food products resulting in Australian consumers' tastes broadening 	
Tariffs	<ul style="list-style-type: none"> taxes added to the cost of imported goods Australian Government can reduce or not apply tariffs to keep costs of imported speciality foods lower resulting in more Australians having access to these foods and meeting food consumption demands of consumers 	
Ownership concentration within the food industry	<ul style="list-style-type: none"> Australian consumers have limited range of large supermarkets to choose to purchase their food from resulting in limited choice which can lead to consumers purchasing food to consume due to ease and convenience and not for health and wellbeing 	
Embargoes	<ul style="list-style-type: none"> ban or restriction put on goods from a particular country for health reasons or because of its political actions Australian Government protects consumers from food identified as being a health risk resulting in affected food being removed from supermarkets and refunds offered to consumers 	
Subsidies	<ul style="list-style-type: none"> cash payments made by the Australian Government to a local producer who can then charge the customer less and compete with cheaper imports Australian Government offers subsidies to local producers resulting in consumers being more likely to purchase a cheaper product from a local producer 	

- (c) Explain **two** social influences that affect the food consumption patterns of Australian adolescents. Suggest **one** way in which each influence could impact young people's future health and wellbeing. (10 marks)

Description		Marks
For each of two social influences:		
Identifies the social influence		1
Subtotal		2
Explains how the social influence affects food consumption patterns		3
Provides a limited explanation of how the social influence affects food consumption patterns		2
States a relevant fact		1
Subtotal		6
For each suggestion:		
Suggests an impact on future health and wellbeing		1
Subtotal		2
Overall total		10
Answers may include, but are not limited to the following:		
Social influences	Explanation	Impact on future health and wellbeing
Peer group	<ul style="list-style-type: none"> social pressure and peer influence are strongest during adolescence and could influence poor eating habits might meet at fast-food outlets to socialise, consuming foods high in saturated fat, salt and sugar 	<ul style="list-style-type: none"> consuming foods high in saturated fat, salt and sugar could contribute to weight gain
Culture and traditions	<ul style="list-style-type: none"> many religions have customs that have food restrictions and adolescents may change their food choices to fit in with peers adolescents may show independence from parents by eating foods to fit in with peers, such as vegetarian or vegan eating foods not permitted in their family culture show independence from parents 	<ul style="list-style-type: none"> increased risk of anaemia due to vegetarian or vegan diet
Media, advertising and marketing	<ul style="list-style-type: none"> use of celebrities, media practices (including music, body image, colour, fonts and graphics) and food-styling techniques to market food products much of food advertised is lower in nutritional value and presented attractively to encourage adolescents to purchase 	<ul style="list-style-type: none"> increased risk of eating disorders as a result of media pressure to look a certain way
Lifestyle	<ul style="list-style-type: none"> adolescents may lead a sedentary lifestyle with limited exercise overconsumption of energy dense foods that can contribute to weight gain adolescents may belong to a sporting club which would increase their activity level 	<ul style="list-style-type: none"> increased risk of lifestyle diseases such as Type 2 diabetes as a result of inactive lifestyle and consumption of energy dense foods

Question 26

(20 marks)

(a) Describe the **four** marketing mix strategies used by product developers. (8 marks)

Description		Marks
For each of the four marketing mix strategies:		
Identifies and describes the strategy		2
Identifies the strategy		1
Total		8
Answers may include, but are not limited to the following:		
Marketing mix strategy	Description	
Product	<ul style="list-style-type: none"> physical features as well as service, packaging and pricing ensuring product features meet the need of the intended consumer brands and imaging linked with a product visibility of product on the shelf 	
Price	<ul style="list-style-type: none"> determined by costs involved in developing, producing and marketing the product estimation of the quantity of product that needs to be sold to ensure profitability 	
Promotion	<ul style="list-style-type: none"> influences consumers attitude and buying behaviours effective food promotion uses all the senses to attract consumers using promotional tools such as media, samples, personalised advertising or point of sale displays 	
Place	<ul style="list-style-type: none"> location of food outlets to attract/service consumers placement of items within food outlets to tempt consumers to purchase a product(s) 	

- (b) Explain how a supermarket could use **two** product placement strategies to increase sales of Joosilicious pineapple juice. (6 marks)

Description		Marks
For each of two product placement strategies:		
Explains in detail the product placement strategy and how it increases sales		3
Provides a limited explanation of a product placement strategy and links it to increased sales		2
Identifies a product placement strategy		1
Total		6
Answers may include, but are not limited to the following:		
Placement strategy	Explanation	
Eye level	<ul style="list-style-type: none"> • items for children at eye level • increases their want for an item as they can see it easier • use of 'pester power' 	
Volume of product	<ul style="list-style-type: none"> • place a large number of the product item on the shelf • suggests greater viability of a product which can increase sales 	
Entrance of supermarket	<ul style="list-style-type: none"> • first products consumers see as entering store • maximises sales by placing fresh produce at the front of the store as vibrant colours are known to place consumers in a happy mood so they will stay longer 	
Middle of the aisle	<ul style="list-style-type: none"> • items at the start of aisles sell in fewer numbers • consumers take time before they decide what to buy 	
Placed with similar item	<ul style="list-style-type: none"> • placing with a complementary item such as snack foods and juice together can increase suggestive sales 	
Checkout	<ul style="list-style-type: none"> • increases the convenience of the product • increases impulse buying while paying for other items 	
Health food section	<ul style="list-style-type: none"> • linked to healthy eating and health benefits • portrays an environmentally-aware product and producer • increase saleability by breaking into a niche market 	

Question 26 (continued)

- (c) Explain how the labelling on Joosilicious pineapple juice is misleading, supporting your answer with **two** examples. (6 marks)

Description		Marks
For each of the two examples:		
Identifies an example of misleading information		1
Subtotal		2
Explains how the information could mislead		2
Provides a limited explanation of how the information could mislead		1
Subtotal		4
Overall total		6
Answers may include, but are not limited to the following:		
Labelling examples	Explanation	
High dose of energy or Sugar listed second on ingredients list	<ul style="list-style-type: none"> ingredients list shows that this energy is derived from added sugar added sugar high-sugar drinks have been linked to dietary-related diseases high-sugar drinks increase blood sugar levels 	
Daily dose of vitamins or Added Vitamin C	<ul style="list-style-type: none"> ingredients list shows that vitamins are from added vitamin C and makes no reference to Recommended Daily Intakes consumers may consider this claim as providing them enough daily vitamin requirements and may consume this product instead of fresh fruit and vegetables fruit juice from reconstituted juice does not have the same nutritional qualities as fresh juice 	
Smiling and winking pineapple logo or Name of company	<ul style="list-style-type: none"> friendly logo displayed on bottle may be seen by younger audience and parents as a drink that is healthy to be consumed by children the drink has a very high sugar content 	
Contains 25% real fruit or Pineapple juice from reconstituted fruit	<ul style="list-style-type: none"> bottle reads 25% real fruit fruit is derived from reconstituted fruit and not fresh fruit reconstituted juice does not have the same nutritional qualities as fresh juice 	
Preservatives lists	<ul style="list-style-type: none"> preservative 202 is linked to health issues like asthma, eczema and dermatitis preservatives can affect people in different ways not all people are aware of the effect of preservatives linked with the smiling presentation of the juice people think they are buying a healthy product 	
GMO Free	<ul style="list-style-type: none"> linked to healthy eating and health benefits portrays an environmentally aware product and producer 	
Flavour added	<ul style="list-style-type: none"> some additives fuel disruptive behaviour, restlessness, lack of concentration, fidgeting linked to hyperactivity in some children children that have diagnosed attention-deficit hyperactivity disorder are advised to avoid food with artificial flavours as there is a link between these and release of histamines, causing hyperactivity some children with genetic pre-disposition maybe super-sensitive to flavour additives 	
All natural	<ul style="list-style-type: none"> indicates all ingredients are natural without acknowledging that preservatives are added 	

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- Question 21(b)** Information from: Australian Bureau of Statistics. (2011). *364.0.55.007–Australian health survey: Nutrition first results–foods and nutrients, 2011–12*. Retrieved November, 2017, from www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/4364.0.55.007~2011-12~Main%20Features~Key%20Findings~1
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- Question 23(a)** Excerpt from: Australian Association of National Advertisers. (n.d.). *About AANA*. Retrieved November, 2017, from <http://aana.com.au/about/>
- Question (26)** Information from: Reynolds, E. (2015). The truth about genetically modified food. *News*. Retrieved November, 2017, from www.news.com.au/lifestyle/food/the-truth-about-genetically-modified-food/news-story/74211e046436937846f0bea00e0ad81c

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