Government of **Western Australia**
School Curriculum and Standards Authority

FOOD SCIENCE AND TECHNOLOGY

ATAR course examination 2019

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.

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Section One: Multiple-choice **15% (15 Marks)**

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

Section Two: Short answer **55% (68 Marks)**

Question 16 **(10 marks)**

(a) Identify **two** types of carbohydrates and **two** types of lipids. (4 marks)

Description		Marks
For two types of carbohydrates		1–2
For two types of lipids		1–2
	Total	**4**
Answers may include, but are not limited to the following:		
Carbohydrates	• starch • sugar • cellulose **or** fibre • glucose • sucrose • lactose • galactose • complex carbohydrates • simple carbohydrates	
Lipids	• fats • oils • trans fats • saturated fats • monounsaturated fats • polyunsaturated fats	

Question 16 (continued)

(b) Explain how dietary choices of carbohydrates and lipids can reduce the incidence of disease. (6 marks)

Description	Marks
Explains how dietary choices of carbohydrate can reduce the incidence of disease	3
Describes how dietary choices of carbohydrate can reduce the incidence of disease	2
States how dietary choices of carbohydrate can reduce the incidence of disease	1
Subtotal	**3**
Explains how dietary choices of lipids can reduce the incidence of disease	3
Describes how dietary choices of lipids can reduce the incidence of disease	2
States how dietary choices of lipids can reduce the incidence of disease	1
Subtotal	**3**
Total	**6**

Answers may include, but are not limited to the following:

Macronutrient	Explanation
Carbohydrate	• reduce the intake of processed foods containing sugar as foods with a high sugar content can lead to obesity • reduce soft drink intake as these drinks have a high sugar content that can cause obesity **or** diabetes • consume low sugar foods in moderation **or** sugar free foods
	• include wholegrain cereals and breads as they are digested more slowly due to the fibre content • include fibre rich foods such as fruit **or** vegetables that stimulate peristalsis in the gut to avoid constipation **or** diverticulitis **or** bowel cancer • reduce intake of refined breads and cereals that lack fibre **or** vitamins **or** minerals essential for good health
Lipids	• increase consumption of monounsaturated and polyunsaturated fats that can reduce cholesterol levels **or** cardiovascular disease • reduce the intake of saturated fats that elevate cholesterol levels **or** lead to heart disease • remove visible fat from meats and poultry as it contains saturated fats which increase the risk of cardiovascular disease
	• purchase fat reduced dairy products to lower lipid intake and reduce heart disease **or** obesity • avoid cakes **or** pastries **or** processed foods **or** deep fried foods as they contain trans fats that are the most harmful to health • increase the intake of vegetable based protein foods to reduce saturated fat intake that is detrimental to health

Question 17 **(8 marks)**

(a) State **one** adaptation that could be made to each of **two** ingredients in the recipe. Describe how each adaptation would improve the nutritional value of the quiche.

(6 marks)

Description	Marks
For each ingredient	
States a suitable adaptation	1
Subtotal	**2**
Describes how the adaptation will improve nutritional value	2
Identifies how the adaptation will improve nutritional value	1
Subtotal	**4**
Total	**6**

Answers may include, but are not limited to the following:

Ingredient	Adaptation	Improved nutritional value
Plain flour	Wholemeal flour	• increases the fibre for improved digestive health • can improve cholesterol **or** blood sugar levels • assists in preventing some diseases such as diabetes **or** heart disease **or** bowel cancer
Bacon rashers	Mushrooms **or** tofu **or** capsicum **or** spinach **or** turkey bacon **or** salmon **or** short cut bacon **or** chicken breast	• reducing saturated fat reduces the risk of heart disease **or** lowers cholesterol levels **or** reduces kilojoule content • reducing salt decreases risk of high blood pressure • increasing vitamin **or** mineral **or** omega 3 **or** fibre content for better health outcomes
Cream	Reduced fat cream **or** evaporated milk **or** Greek yoghurt	• reducing saturated fat reduces the risk of heart disease **or** lowers cholesterol levels **or** reduces kilojoule content
Milk	Reduced fat milk **or** almond milk **or** soy milk	• reducing saturated fat reduces the risk of heart disease **or** lowers cholesterol levels **or** reduces kilojoule content
Cheese	Reduced fat cheese	• reducing saturated fat reduces the risk of heart disease **or** lowers cholesterol levels **or** reduces kilojoule content
	Ricotta cheese	• reducing salt to decrease risk of high blood pressure
Butter	Margarine **or** poly/mono saturates	• reducing saturated fat reduces the risk of heart disease **or** lowers cholesterol levels **or** reduces kilojoule content

Question 17 (continued)

(b) Describe **one** food processing technique used to control the performance of the ingredients in the quiche. (2 marks)

Description	Marks
Describes a processing technique	2
Identifies a processing technique	1
Total	**2**

Answers may include, but are not limited to the following:

Processing technique	Description
Application of cold	• reducing the temperature • makes the dough easier to roll out **or** reduces shrinkage during the baking process
Manipulation **or** mechanical	• cutting bacon **or** onion **or** cheese into smaller pieces using a knife **or** a grater • provides more surface area **or** greater **or** quicker reaction to further processing techniques **or** enables ingredients to mix
	• mixing with a fork or whisk • blends the egg white and egg yolk
	• sifting aerates the flour • gives a smoother, lighter dough
Application of heat	• to apply dry heat usually in an oven • transforms batter or dough into coagulated filling or firm dry crust
	• to apply heat in a frypan through a small amount of fat or oil • to develop flavour in the ingredients

Question 18 **(8 marks)**

(a) Describe the role of local authorities in implementing the *Food Act 2008 (WA)*. (2 marks)

Description	Marks
Describes the role of local authorities	2
States role of local authorities	1
Total	**2**
Answers may include, but are not limited to the following:	
• local councils employ Food Safety Officers who enforce the *Food Act* on all food business through inspections • carry out inspection on food and places of sale • have the power to fine **or** shut down businesses that do not comply with the *Food Act*.	

(b) Describe **three** provisions of the *Food Act 2008 (WA)* that Julie will have to comply with in order to operate her cake business. (6 marks)

Description		Marks
For each provision:		
Describes a provision to implement		2
States a provision to implement		1
Total		**6**
Answers may include, but are not limited to the following:		
Provisions of the *Food Act*	**Description**	
Safe food handling	• foods that are served hot must be kept at above 60 °C **or** foods that are served cold must be kept below 5 °C • to destroy disease causing bacteria and prevent further bacterial growth	
Cleaning regime	• food premises must be kept clean **or** free from vermin **or** pests by implementing pest control measures **or** regular cleaning practices • to prevent contamination of food	
Equipment is in good working order and maintained	• refrigerators and freezers are kept at the correct temperature, below 5 °C and below -18 °C **or** regular maintenance is performed on equipment • to prevent food spoilage or growth of bacteria	
Thermometers used	• use of thermometers to check the temperature of storage equipment such as refrigerators **or** freezers • to prevent food spoilage • temperatures are recorded throughout the day to keep records of properly maintained temperatures	
	• probe thermometers used to check the internal temperatures of cooked food such as meats • to prevent serving under cooked foods which could be contaminated	
Use reputable suppliers	• use of suppliers who are also compliant with the *Food Act* • ensures that the products purchased are of the quality required	
	• suppliers that are not compliant with the *Food Act* cannot be relied upon to have safe food handling practices • unsafe food could be passed onto the consumer	
Describe food correctly	• cakes do not require a food label however, the food must be described correctly to consumers • consumers rely on correct descriptions to make decisions on their consumption of certain foods, particularly with known allergen foods, e.g. nuts **or** dairy **or** wheat	

Question 19 (6 marks)

Select **two** functional foods from Madison's daily food intake. Identify the functional component in **each** and describe how **each** could be beneficial to her health. (6 marks)

Description	Marks
For each functional food:	
Identifies the functional component of selected functional food	1
Subtotal	**2**
Describes the benefit to health	2
States a benefit to health	1
Subtotal	**4**
Total	**6**

Answers may include, but are not limited to the following:

Functional food	Functional component	Description
Spinach **or** asparagus	Dietary fibre	• healthy digestive tract • reduce risk of cardiovascular heart disease • reduce the risk of some types of cancer • maintenance of healthy blood glucose levels
Salmon **or** cheese	Fatty acids	• reduce risk of cardiovascular heart disease and maintain heart health • maintenance of mental and visual function • contribute to desirable body composition and healthy immune system
Quinoa **or** oats/instant porridge **or** asparagus	Prebiotics	• improve gastrointestinal health • improve calcium absorption
Yoghurt	Probiotics	• improve gastrointestinal health and systemic immunity • assists in the maintenance of gut flora • assists immune system
Cranberries	Antioxidants	• improve heart health • support digestive health • maintenance of urinary tract health

Question 20 **(10 marks)**

(a) Describe **two** risk factors that may contribute to the development of diabetes. (4 marks)

Description	Marks
For each risk factor:	
Describes a factor that may contribute to the development of diabetes	2
States a risk factor that may contribute to the development of diabetes	1
Total	**4**
Answers may include, but are not limited to the following:	
• the immune system attacks and destroys insulin-producing cells in the pancreas • which results in the pancreas producing little or no insulin	
• when pregnant the placenta produces hormones which make cells more resistant to insulin • the pancreas cannot produce enough extra insulin to compensate	
• lifestyle choices such as overweight **or** obese **or** lack of physical activity • which results in insulin resistance where the pancreas produces enough insulin but the body cannot use it effectively	
• genetic susceptibility **or** family history • increases the risk of developing diabetes	

(b) State **three** health complications of diabetes. (3 marks)

Description	Marks
For each health complication:	
States the complication	1
Total	**3**
Answers may include, but are not limited to the following:	
• kidney **or** bladder damage • high blood pressure • coeliac disease • foot ulcers **or** amputations • depression • vision changes such as weak focussing ability **or** diabetic retinopathy • early miscarriage **or** maternal high blood pressure **or** pre-eclampsia **or** having a large baby • dry skin **or** eyes **or** nose **or** mouth • heart disease • serious influenza complications.	

Question 20 (continued)

(c) Explain how the glycaemic index of food can be used to help regulate blood sugar levels. (3 marks)

Description	Marks
Explains how glycaemic index (GI)can be used to regulate blood sugar levels	3
Describes a link between GI and blood sugar levels	2
States a fact about the GI of food	1
Total	**3**

Answers may include, but are not limited to the following:

- high GI foods digest and absorb into the bloodstream quickly
- high GI foods cause large **or** rapid changes in blood sugar levels
- by eating foods with a high GI, people with diabetes experiencing hypoglycaemia can raise their blood sugar levels and avoid becoming seriously unwell
- low GI foods digest and absorb more slowly
- low GI foods produce a gradual rise in blood sugar and insulin levels
- by eating a diet with a lower GI, people with diabetes can reduce their average blood glucose levels. This is important in reducing the risk of developing diabetes-related complications.

Question 21 **(8 marks)**

Describe how **two** adaptations to commodities and **two** adaptations to technologies are used to develop new food products.

Description		Marks
For each adaptation:		
Describes how the adaption is used to develop new food products		2
States how the adaption is used to develop new food products		1
Total		**8**
Answers may include, but are not limited to the following:		
Adaptation	**Description**	
Commodities	• a reduction in the salt **or** sugar **or** fat content of foods • has led to development of food products with health benefits	
	• an increase in the micronutrient **or** fibre content of foods • has led to the development of foods with health benefits **or** functional foods	
	• value-adding techniques such as grated cheese, pre-prepared vegetables has added to the convenience of food products for the consumer	
	• the addition of additives such as those contributing to flavour **or** colour **or** texture • has led to the development of food products with improved sensory properties	
Technologies	• packaging technologies such as modified atmosphere, aseptic and vacuum packaging • have led to the development of food products with increased shelf life	
	• microencapsulation enables omega-3 fatty acids to be added to foods • consumers can obtain omega-3 without the need to eat fish	
	• high pressure processing destroys microbes without the use of heat the nutrient content of the food is not damaged and shelf life is extended	
	• the development of fat **or** sugar replacements • has led to the production of foods with improved health benefits	
	• the development of GM products • results in products with improved nutrition or appearance	
	• ultra filtration • development of low fat products	

Question 22 (10 marks)

(a) Describe **three** reasons why global food inequity has led to an increase in the percentage of the population that suffers from over-nutrition. (6 marks)

Description	Marks
For each reason:	
Describes why global food inequity has led to an increase in the incidence of over-nutrition	2
States a fact about why global food inequity has led to an increase in the incidence of over-nutrition	1
Total	**6**
Answers may include, but are not limited to the following:	
• often valuable food commodities are sold to increase a country's economy • this reduces the quantity of staple foods available to the population	
• poorer countries are not able to distribute nutrient dense food amongst the population • cost of transportation of fresh fruit **or** vegetables **or** fresh meats to rural **or** remote communities is high so these communities rely on nutrients from cheaper energy dense foods	
• the cost of fresh fruit **or** vegetables **or** meat is unaffordable in some communities therefore consumers must eat what they can afford • leads to an increased consumption of affordable energy dense meals with low nutritional value	
• people are largely time poor • demand for conveniently prepared meals which have added sugar **or** saturated fat **or** salt	
• large multi-national companies which are profit driven, produce affordable energy dense foods with little regard for the long term consequences to the consumer • low income families are forced to eat what they can afford which is often foods produced by these large multi-national companies	
• income inequality around the world • energy dense foods are cheaper to produce **or** purchase which limits the choices for people who have low income	

(b) Describe **two** strategies that could be used to reduce the global incidence of over-nutrition. (4 marks)

Description	**Marks**
For each strategy:	
Describes a strategy	2
Identifies a strategy	1
Total	**4**

Answers may include, but are not limited to the following:

Strategy	**Discussion**
Nutrition and health promotion campaigns	• the role of government has proven to be crucial in achieving lasting changes in public health • makes communities as a whole aware of the problem and gives them a strategy to approach change
	• emphasis on the need to limit the consumption of saturated fats, trans fatty acids, salt and sugars **or** to increase consumption of fruit and vegetables **or** levels of physical activity • use of public awareness campaigns, e.g. 2 and 5 **or** Eat Brighter, Live Lighter
Government policy	• introduction of policies **or** possible taxes to restrict the easy access the foods that are energy dense • global **or** local strategies such as the sugar tax **or** local communities supporting free physical activity groups
Education	• education is key for individuals being able to make informed choices • providing people with the tools to create healthy, nutrient dense meals through community education programs **or** • nutrition education in schools could assist future generations

Question 23 (8 marks)

Identify **two** techniques that the soft drink producer could use to recapture market share. Justify why **each** would be an effective way of achieving the soft drink producer's objective.

Description	Marks
For each technique:	
Identifies a technique	1
Subtotal	**2**
Justifies why it is an effective way to achieve the objective	3
Discusses briefly why it is an effective way to achieve the objective	2
States why it is an effective way to achieve the objective	1
Subtotal	**6**
Total	**8**

Answers may include, but are not limited to the following:

Technique	Justification
Line extension	• minor changes to extend producer's existing products by incorporating new features, e.g. flavours **or** colours **or** health **or** diet-related variations **or** packaging • used to respond to marketplace trend • recognises the current demand of consumers is changing
	• used to identify a new market segment that can be targeted • can be a value adding strategy for existing products • can capitalise on the success of existing products
'Me-too' product	• investigate competitors' products • exploit the current success of competitors and design a similar product to be able to compete with current market leaders • this technique relies on aggressive marketing, **or** advertising **or** and promotion around the 'me-too' product
	• ability to produce a cheaper **or** generic **or** gourmet version of an already popular product • uses existing production equipment which reduces costs • allow producers entry to already established markets
Innovative product	• creation of an entirely new food product for consumers • features such as value-added foods **or** functional foods **or** packaging • can be derived from innovations in technology
Brand extension	• create an entirely new product for the brand to target other market segments, e.g. soft drink to snack foods • identify sections in the market that are popular and use the strength of the brand to create a new product which diversifies the product range • the image of the 'parent brand' is enhanced by appealing to consumer's needs and the ability for consumers to seek more variety
Penetration pricing or competitive pricing	• lowering price • captures market share

Section Three: Extended answer **30% (40 Marks)**

Question 24 **(20 marks)**

(a) Describe **four** factors that influence the development of new food products. (8 marks)

Description		Marks
For each factor that influences the development of new food products:		
Describes the factor		2
Identifies the factor		1
	Total	**8**
Answers may include, but are not limited to the following:		
Population growth	• migration has increased the population • food product developers have responded by producing a variety of foods appropriate to a range of cultures	
Changing demographics	• the population is ageing, many older people are choosing to remain in their homes **or** there is an increase in the number of single person households • people want easily prepared single serve meals in easily opened packaging	
Convenience	• consumers are time poor and there is an increase in the number of smaller households • consumers are looking for food that can be prepared with little time **or** skill **or** resources	
Cost	• food products must be priced to suit the target market • smaller quantities **or** single serves **or** special offers **or** gourmet items sold at prices the consumer can afford while allowing the producer to make a profit	
Technology	• new processing and packaging such as membrane technology **or** microencapsulation **or** asceptic or vacuum packaging and production techniques such as GM • have led to the development of new products	

Question 24 (continued)

(b) For **each** of the tables shown above:
- identify how the data have been collected
- describe the method used to collect the data
- identify the type of data collected. (8 marks)

Description		Marks
For each of the tables:		
Identifies how the data was collected		1–2
Subtotal		**2**
Describes the method used to collect the data		2–4
Subtotal		**4**
Identifies the type of data collected		1–2
Subtotal		**2**
Total		**8**
Answers may include, but are not limited to the following:		
How the data was collected	Data collection one: • sensory evaluation using taste testing	
	Data collection two: • through a survey of 20 people	
The method used to collect the data	Data collection one: • a panel of four tasters used personal opinion to assess the sensory properties of the food • each characteristic ranked from one to five	
	Data collection two: • factual **or** measurable data collected • the results were converted to percentages	
The type of data collected	Data collection one: • qualitative data	
	Data collection two: • quantitative data	

(c) Use the data provided in the tables in part (b) to justify **two** recommendations to improve the food product. (4 marks)

Description	Marks
For each recommendation:	
Justifies the recommendation	2
States the recommendation	1
Total	**4**
Answers may include, but are not limited to the following:	
• data collection one shows that the lowest scoring characteristic was the crispness of the crumb coating • a recommendation would be to alter the type of crumb used **or** to increase the temperature of the initial cooking **or** to adjust the reheating instructions	
• data collection two shows that the viscosity of the sauce was a concern for respondents • recommendations could include the selection of an alternative sauce recipe **or** to delete the sauce and advise the consumer to use a commercial sauce **or** lemon juice	
• both data tables show a small number of respondents • a larger sample group would give a more reliable result	

Question 25 **(20 marks)**

(a) Describe the term 'genetic modification', as it applies to food production. Discuss **two** requirements of Food Standards Australia and New Zealand when genetically-modified crops are used in the production of foods for human consumption. (8 marks)

Description	Marks
Describes the term genetic modification	2
Makes a statement about genetic modification	1
Subtotal	**2**
For each discussion:	
Discusses a Food Standards Australia and New Zealand (FSANZ) a requirement	3
Describes a FSANZ requirement	2
States a FSANZ requirement	1
Subtotal	**6**
Total	**8**

Answers may include, but are not limited to the following:

- genetic modification is the ability to make a copy of a particular gene from the cells of a plant, animal or microbe, and insert the copy into the cells of another organism. Resulting in a desired characteristic that will aid in the future sustainability of the plant, animal or microbe
- changing the makeup of a plant, animal or microbe to give it different characteristics.

FSANZ requirements

Mandatory pre-market approval

- rigorous and transparent testing is undertaken to assess the safety of GM foods
- data is collected over a period of time to ensure that the GM product is safe for human consumption
- a substance that is permitted for use as a food additive by FSANZ
- all GM foods can only be sold legally in Australia if it has been assessed, found to be safe and approved by FSANZ
- each new genetic modification is assessed individually for its potential impact on the safety of the food

Mandatory labelling requirements

- state that GM ingredients included in the product must be indicated on the label to help consumers to identify any GM products to be able to make informed decisions
- if the GM food is an ingredient used as a processing aid the information may be included as a statement, e.g. Ingredients: Soy Protein Isolate (genetically modified)
- some exemptions apply to foods that make up less than 1% of the final food product

Question 25 (continued)

(b) Describe **one** benefit of genetic modification for each of the following:
- yield
- environmental conditions
- commodity prices. (6 marks)

Description	Marks
For each benefit:	
Describes a benefit	2
States a benefit	1
Total	**6**

Answers may include, but are not limited to the following:

Benefit	Description
Yield	• genetic modification in food production is used to increase the yield of crops due to the ability to be able to control the growth of crops in different conditions • increasing the ability to feed more people globally • less reliance on chemical fertilisers **or** pesticides which reduces costs to producers • increase in the efficiency of how plants take up nutrients for growth means a shorter growing period
Environmental conditions	• drought resistant crops reduce the need for extensive irrigation and water systems which reduces costs • insect resistant GM crops reduce the need for pesticides and there is less runoff of pesticides into waterways
Commodity prices	• the cost of producing crops using GM technology is generally lower than producing the same crops using conventional technology • this is due to the savings spent on pesticides and fertilisers • increased productivity of GM crops reduces the price of staple foods consumed in developing countries

(c) Explain **two** risks of the genetic modification of food. (6 marks)

Description		**Marks**
For each risk:		
Explains the risk		3
Describes the risk		2
States the risk		1
	Total	**6**
Answers may include, but are not limited to the following:		
Risk	**Description**	
Impact on health	• uncertainty about the effect of genetic modification foods (GM) on allergy sufferers • people will not know whether foods have been altered with proteins they are allergic to	
	• GM is a relatively new technology in food production • the long term effects on health are unknown	
Impact on the environment	• cross pollination of conventional crops by GM crops • threatens crop diversity	
	• possible transfer of GM characteristics to weeds • creation of weeds that are difficult to kill	
Antibiotic resistance	• antibiotic resistance in humans could be increased • caused by the possible use of antibiotics in the GM process	

Question 26 **(20 marks)**

(a) Discuss **one** advantage and **one** disadvantage of the consumption of micronutrient supplements. (4 marks)

Description	Marks
For each advantage and disadvantage:	
Discusses an advantage or disadvantage	2
States an advantage or disadvantage	1
Total	**4**
Answers may include, but are not limited to the following:	
Advantages • supplements can add missing nutrients to your diet • supplements can help maintain optimal health if your dietary intake is low **or** augment those you consume in whole foods	
• folic acid taken by pregnant women to prevent birth defects such as spina bifida **or** teenagers and young women take vitamin D to help regulate the amount of calcium in the body which keeps bones and teeth strong • supplements can prevent a variety of diseases and health conditions	
Disadvantages • consuming too much of some vitamins can adversely affect well-being For copyright reasons this text cannot be reproduced in the online version of this document.	
For copyright reasons this text cannot be reproduced in the online version of this document.	
• supplements do not provide valuable amounts of macronutrients contained within whole foods • supplements are not whole foods	
• supplements may interact with prescription medication and make it more difficult to manage medical conditions • mixing certain vitamins and minerals can interfere with absorption	
• supplements are expensive • micronutrients sourced from foods are cheaper	

Question 26 (continued)

(b) Select **two** genetic influences and demonstrate how **each** could impact on health and wellbeing. (4 marks)

Description		Marks
For each influence selected:		
Demonstrates impact		2
States impact		1
	Total	**4**
Answers may include, but are not limited to:		
Gender	• women require more iron than men • menstruation and birth mean women have increased iron requirements	
	• women tend to develop Type 2 diabetes later in life • at a slightly lower rate than men	
	• women experience some mental health conditions at higher rates than men • 1 in 5 women in Australia will experience depression **or** 1 in 3 women will experience anxiety during their lifetime **or** post-traumatic stress disorder rates are higher in women **or** eating disorder rates are higher in women	
	• men require more protein than women • men have more muscle mass	
Race	• Indigenous Australians are three times more likely to have Type 2 diabetes compared to non-Indigenous Australians • even higher for those Indigenous Australians living in remote areas	
	• Indigenous Australians are also at greater risk of complications than non-Indigenous Australians • kidney failure is ten times more likely **or** high blood pressure is eight times more likely	
	• race may predispose individuals to certain conditions • certain races have a higher incidence of diabetes	
Family history	• family history may predispose an individual to the possible risk of developing a disease such as cardiovascular disease **or** obesity **or** diabetes **or** high blood pressure **or** high cholesterol levels • an individual can use family history to look at ways to reduce risk	

(c) Describe how **three** lifestyle risk factors cause health issues. Recommend **one** strategy to reduce the risk to health and wellbeing for **each** factor. (12 marks)

Description	Marks
For each lifestyle risk factor:	
Describes how the factor causes health issues	2
States how the factor causes health issues	1
Subtotal	**6**
Recommends one way to reduce the risk to health and wellbeing	2
States one way to reduce the risk to health and wellbeing	1
Subtotal	**6**
Total	**12**

Answers may include, but are not limited to the following:

Lifestyle factors	Causes of health issues	Strategies to reduce risk to health and wellbeing
Exercise	For copyright reasons this text cannot be reproduced in the online version of this document.	
Smoking	• smokers inhale about 7,000 chemicals in cigarette smoke • smoking can cause lung cancer **or** heart attack **or** stroke	• do not smoke or quit smoking • use nicotine substitutes to not be exposed to smoke • smoking affects the smoker's ability to exercise • limit exposure to areas where there may be smokers
	• smokers can be more anxious **or** stressed **or** depressed • smoking can cause premature skin aging **or** loss of teeth	
	• the cost of smoking may inhibit the amount able to be spent on nutritious food • smoking can affect the smoker and those around the smoker	
Illicit drug use	• short and long term health effects vary according to type of drug • overdose can result in death **o**r addiction causes a wide range of health problems	• stop illicit drug use • adopt harm reduction initiatives include such as needle and syringe programs **or** opioid pharmacotherapy treatment **or** peer education programs **or** diversion programs **or** caution schemes.
	• long term use can result in catching a blood borne virus **or** developing bacterial **or** heart infections **or** vein damage • some illicit drugs are associated with mental health disorders	

Question 26(c) (continued)

Lifestyle factors	Causes of health issues	Strategies to reduce risk to health and wellbeing
Alcohol consumption	• alcohol interferes with the brain's communication pathways which can cause mood and behaviour changes **or** lack of concentration **or** coordination • excess alcohol consumption can impact heart health **or** liver function **or** the development of some cancers • high alcohol consumption may lead to an inadequate diet	• consume alcohol in standard drink portions • drink no more than 2 standard drinks on any day to cut the lifetime risk of harm from alcohol-related disease **or** injury • consume a max of 4 standard drinks on a single occasion
Diet	• poor nutrition may result from too much **or** too little **or** unbalanced proportion of food • poor nutrition can contribute to overweight or obesity **or** tooth decay **or** heart disease or diabetes or osteoporosis **or** some cancers **or** depression **or** anaemia **or** constipation **or** diverticula	• control portion sizes • eat sufficient nutritious foods to develop normally • match energy input with energy output • avoid processed or takeaway foods • cook meals from scratch
	• not eating the recommended serves of fruit and vegetables per day increases the risk of digestive disease • caused by reduced fibre **or** micronutrient intake	

ACKNOWLEDGEMENTS

Question 20(a) Dot points 1 & 2 adapted from: National Association of Managed Care Physicians (NAMCP). (2008). *What is diabetes and what are the different types?*. Retrieved October, 2019 from http://www.namcp.org/diabetes/html/info/whatisdiabetes.html

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