

# 2018 VCE Food Studies examination report

## General comments

The 2018 VCE Food Studies examination assessed students' knowledge and understanding of Areas of Study 1, 2 and 3 of Units 3 and 4. All key knowledge and key skills that underpin the outcomes were examinable.

The examination consisted of two parts: Section A contained 15 multiple-choice questions, and Section B contained 11 questions.

This report should be read in conjunction with the 2018 VCE Food Studies examination.

Many students did not focus on the information provided in the stems of the questions. This resulted in students being unable to tailor the content of their answers to the focus of the question.

Reading and using the data or information provided in questions was also not done well.

Areas of strength included demonstrating an understanding of:

- biological reasons for differences in dietary requirements
- organic food production
- food security
- social factors that influence food choice
- components legally required on a food label.

The following areas require improvement:

- the principles of research used in the development of the *Australian Dietary Guidelines*
- methods to assess the validity of food information
- chemical digestion of carbohydrates
- environmental sustainability of primary food production, including biodiversity and its importance in maintaining environmental sustainability
- behavioural principles of repetition and exposure and their role in establishing healthy eating patterns
- influence of social media in shaping and informing consumer choice
- nutritional rationale of the 'Australian Guide to Healthy Eating'
- assessing the nutritional efficacy of a food trend
- environmental effects of transporting food throughout the food system
- pathways to improve food equity for low-income Australians
- genetic modification in food production.

## 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.

### 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	0	0	1	98	
2	7	79	8	6	
3	9	13	68	9	
4	75	4	8	13	
5	5	60	8	27	
6	18	10	14	58	The microwave emits radio waves that penetrate the food and cause the water molecules in the food to vibrate. The friction between the moving molecules generates heat and cooks the food quickly.
7	77	5	0	18	
8	45	22	27	6	The <i>Australian Dietary Guidelines</i> are based on evidence-based research that included a literature review of peer-reviewed nutrition research articles.
9	76	15	6	3	
10	6	5	38	51	Low-impact farming retains the stubble from a previous crop to enrich and stabilise the soil, not removing it as given in option C. Legume crops are used in crop rotation to increase the nitrogen levels in the soil.
11	3	10	6	81	
12	79	3	1	17	
13	5	2	89	4	
14	8	88	3	1	
15	6	6	77	11	

## Section B

### Question 1a.

Marks	0	1	2	Average
%	13	37	50	1.4

For full marks, students were required to explain the relevance of the example given.

- Older-age (70+) people require fewer serves due to being in a period of repair and maintenance rather than growth as compared to a 19–50-year-old who is undergoing a growth phase.
- People who are 70+ years old may have lower activity levels than people aged 19–50 years, and therefore require fewer serves due to decreased energy requirements.

A suitable response could have included one of the following for one mark:

- naming of a relevant nutrient found in this food group such as protein, fat and iron, or energy
- food intakes vary based on age
- lower activity levels of people aged 70+
- less muscle mass in older age group
- this age span is a period of repair and maintenance.

### Question 1b.

Marks	0	1	2	3	Average
%	41	28	21	10	1

A suitable response could have included one of the following reasons:

- quality, quantity and level of evidence
  - the information used is peer reviewed, a professional consensus reached, only those qualified to assess/expert group are used
  - developed through application of rigorous research methodology according to the National Health and Medical Research Council (NHMRC) guidelines
  - developed using a large sample size/evidence base of 55 000 pieces of research and required at least four research studies
  - research is recent/within the previous 10 years
  - based on high-quality studies, primarily systematic reviews
  - graded, strength of evidence/relevance of evidence, size of effect

For full marks the reason given needed to support why the principles are the best information in the planning of daily food intake.

This question was not well answered.

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

*The Australian Dietary Guidelines have been carefully evaluated and assessed by credible organisations such as the National Health and Medical Research Council in order to produce information that most accurately assists with planning daily food intake. The current guidelines are based on 55,000 pieces of evidence as well as 218 submissions from various health experts and organisations. The recommendations regarding daily food intake is highly accurate and reliable.*

**Question 1c.**

Marks	0	1	2	Average
%	26	40	33	1.1

A suitable response could have included:

- A vegetarian should eat a variety of plant-based foods within the protein group (e.g. tofu, nuts, lentils) in combination with other food groups (e.g. grains).
- Meat equivalents can be found in one of the food groups of the 'Australian Guide to Healthy Eating' (protein group). This supplies vegetarians with plant-based protein. By choosing vegetable sources of protein within this group, in combination with other choices, they can be confident in meeting their daily protein requirements.

**Question 2a.**

Marks	0	1	2	3	4	Average
%	54	22	14	6	5	0.9

A suitable response could have included the following:

- biodiversity causes the ecosystem to be stronger, which leads to a stronger food chain
- native animals such as frogs and birds live on insects and help to reduce crop pests
- less extinction of native flora and fauna, therefore reducing the growth of pasture and soil erosion and salinity
- controls disease; for example, birds can destroy some damaging insect pests
- crop pollination improves, therefore an increase in crop yield; for example, birds and bees act as pollinators for crops
- maintain health of waterways used in food production – may include microorganisms (e.g. algae)
- improved organic material recycling – improves soil life and fertility that underpins primary food production. Production of healthy crops relies on healthy and fertile soil, for example, nutrients are recycled, therefore less fertiliser is required and there is less possible damage to the soil through acidity, which reduces yield and causes weaker plants to develop
- greater genetic diversity – stronger breeding, more resistant, healthier flora and fauna; for example, a greater variety of crops, animals, marine life, etc. reduces the risks associated with reliance on a few species of crops or animals, which could fail because of drought, flood or disease. This failure would affect the quantity available for food production.

Students were required to explain their understanding of biodiversity by using an example and linking this reason to the sustainability of primary food production.

This question was not well answered.

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

*Biodiversity is the vast array of living organisms and the interaction between them. Biodiversity relates to the billions of microbes within the soil, which play an important role in maintaining soil health, therefore providing the optimal environment for primary food production, increasing crop yield. Similarly, the birds and bees help pollinate and naturally fertilise plants, flowers, crops. Birds and bats are natural predators of common crop pests which can ensure a high yield from these crops. Both methods are due to natural biodiversity, meaning that less artificial chemicals, like fertilisers, which can decrease sustainability by damaging the soils, if overused, are needed.*

**Question 2b.**

Marks	0	1	2	3	4	Average
%	65	17	10	5	4	0.7

A suitable response could have included the following:

- choice of smaller animals because less trampling of soil and less manure/less methane and therefore less greenhouse gas emissions
- smaller animals require less pasture, space, water and soil
- breeds suitable for environment (e.g. native animals such as emus, dorper sheep that are able to eat native flora such as saltbush) means no pasture planting and less use of fertiliser and water to grow the pasture
- a more sustainable animal production such as fish farming may help to mitigate the production of methane, lessening the impact of global warming.

Students were required to include how the choice of animals could impact on the surrounding environment and describe the positive influence on environmental sustainability for full marks.

This question was not well answered.

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

*The choice of animals for farming could have a positive influence on the environmental sustainability of primary food production due to the selection of specific breeds of goats and sheep. Dorper sheep are highly drought tolerant and are able to feed on native pasture such as saltbush that only grows in mostly arid regions of Australia. As a result excess water and agricultural chemicals are not necessary to produce feed for livestock that will only consume specific pasture. Similarly, goats are also very hardy animals that can survive the harsh climate in Australia as well as consume native and naturally growing pasture such as saltbush. These two animal breeds are essential in positively impacting the environmental sustainability.*

**Question 3a.**

Marks	0	1	2	3	Average
%	61	7	12	20	0.9

A suitable response could have identified one of the following behaviours and an explanation of the behaviour.

Exposure or repetition:

- continually introducing new foods and experiences around food and ensuring regular contact with new foods
- if new food is rejected when introduced, then it needs to be offered again, perhaps in a different form. Children can reject foods up to 15 times before accepting them
- involving children in simple food preparation (e.g. slicing carrots) exposes them to this vegetable

This question was not well answered.

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

*Repetition is one key behavioural principle that is presented in the extract above. Repetition involves consistently presenting children with various foods despite their first negative reaction. It is important to provide foods such as vegetables - carrots, not just on one occasion, but throughout the day and in different forms in order to encourage the children to consume this vegetable and establish healthy eating patterns.*

**Question 3b.**

Marks	0	1	2	3	Average
%	23	22	34	21	1.6

A suitable response could have included one of the following:

- source of article: source is from Advanced Sensory Science and published by a university, which may be an accurate source of information
- author of article: Dr Liem – when a doctor is quoted, this can be a credible source of information
- purpose, focus or message of the article
- context or reason for the study, advice, age of the information – information is up-to-date, published in 2017
- presentation of evidence – scientific evidence, reliable, valid, objective, age of information, use of randomised control trials, which are a good source of data collection
- no reference to sample size or the length of the trial, which can affect the validity of information
- the extract states that it is the first of its kind, therefore it is not backed by previous research
- the language used is technical/professional.

**Question 4a.**

Marks	0	1	2	3	4	Average
%	4	2	15	11	69	3.4

A suitable response could have included two of the following:

Component	Purpose
prescribed name of the food	Should be accurate and specific and advise the consumer exactly what the product is.
lot identification/batch number	An identification of numbers and/or letters that relates to the packaging premises and job lot. It aids in food recall processes.
name and address of the supplier	A reference to the name and business address in either Australia or New Zealand of a person who is a supplier.
advisory statements, warning statements and declarations	Foods that could be a health or safety risk for consumers must include an advisory or warning statement or a declaration. For example, if a food contains a food allergen or if genetically modified technology is used, this must be declared.
a statement of ingredients/ingredients listing	All ingredients must be listed on the food label in descending order of their weight. For example, if sugar features at the beginning of the ingredient list, it means that the product contains a greater weight of sugar than any of the other ingredients listed.
date-marking information	Food that has a shelf life of less than two years must have a 'best-before date' marked on it, whereas foods that must be consumed by a particular date for health and safety reasons must have a use-by date and are prohibited from being sold after the specified date.
storage conditions and directions for use	This must inform a consumer about how to store the food product to ensure it meets its best-before or use-by date. If

	the food product poses a risk if not stored in the correct conditions, then it is mandatory to state the storage on the product to avoid any risks posed to consumers.
information about characterising ingredients and characterising components/percentage labelling	If an ingredient is characterised in the name of the product or in an image or words on the product, this ingredient must be declared as a percentage in the label. The percentage is based on ingoing weight of the characteristic ingredient.
country of origin	To inform the consumer of where the food is made, grown and packed. This will ensure a consumer is aware of what is made in Australia.
weight/measure of contents/quantity measures	A legal requirement of fair trading regulations. Accurate metric weights and measures must be listed on the label.

'Serving suggestions' and 'nutrition panel' were not accepted.

#### Question 4b.

Marks	0	1	2	3	4	5	Average
%	1	13	41	27	14	5	2.6

A suitable response could have included some of the following:

- yoghurt 2 is lower in kilojoules, fats, carbohydrates (including sugar) and higher in protein
- fibre can lead to a feeling of fullness, therefore less food may be eaten. It is only listed in yoghurt 1. There is no fibre listed in yoghurt 2
- kilojoules are a measure of energy units found in foods, and the more fat and sugar in the food the higher the number of kilojoules
- protein contributes to satiety and therefore maintaining healthy weight. Fat also contributes to satiety.

Evaluation could have been positive or negative about the nutrition content of the yoghurts. The answer was required to state specific links between the nutrient content and maintaining a healthy weight.

Explicit information taken from the nutrition panel was required to be awarded full marks, with links to healthy weight management.

Discussion on sodium was not awarded marks.

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

*Based on the nutrition information panels above yoghurt 2 is the better choice for maintaining a healthy weight. This can be determined by comparing the information in the "Qty per 100g" column. By looking at this column rather than the "Qty per serving" column, the nutritional information can be compared between both yoghurts. Yoghurt 2 shows a lower kilojoule content per 100g compared to yoghurt 1, as well as a lower saturated fat content, lower sugar content and lower sodium content. As well as this yoghurt 2 has a higher protein and calcium content compared to yoghurt 1, which contributors to a more nutritious diet. Based on this information consuming yoghurt 2 coincides with Australian Dietary Guideline 3 which requires consumers to limit their intake of foods high in in saturated fat, added salt, added sugar and alcohol. As a result yoghurt 2 will be a better choice for maintaining a healthy weight.*

**Question 5a.**

Marks	0	1	2	3	4	Average
%	5	9	23	28	35	2.8

A suitable response could have included:

- Available time:
  - meals come with clear instructions and suggested preparation time, so you can better plan the time you have when preparing meals
  - the meals are easy to prepare and this assists in saving time
  - the boxes are a convenient option for those with less time available to cook and prepare healthy, fresh meals and to find time to shop
- Income:
  - with the price of individual meals given on the online shopping cart, you can budget and use your income more wisely on food purchases
  - there are options to choose different packages to suit different incomes
  - the consumer is less likely to buy food items they do not need as the box is prepared for them and the consumer does not go to the supermarket, therefore saving money
  - the individual meal costs quoted may be cheaper than many fast food meals, therefore could be cheaper for the consumer
  - cost of meals may be prohibitive for low-income families

**Question 5b.**

Marks	0	1	2	3	4	5	6	Average
%	25	19	25	17	10	4	1	1.9

A suitable response could have included the following:

- healthy and nutritious recipes are provided
- there is a portion size of the meal provided because recipes give some guidance as to the number of serves and the quantity of ingredients
- fresh produce and ingredients – reflects variety in the ‘Australian Guide to Healthy Eating’

Students were required to use the information provided in boxes 1, 2 and 4 in the question stem to demonstrate how the nutritional efficacy of the food trend could be assessed.

This question was not well answered.

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

*The nutritional efficacy of the food trend is high as it aligns with the Australian Guide to Healthy Eating. This food trend allows consumers to obtain fresh produce and ingredients and gives them a range of healthy, nutritious recipes to choose from. Therefore consumers can obtain their daily servings for the five food groups as recommended by the AGHE. The recipes indicate the number of serves provided and this helps with portion size. The boxes are delivered to the home and only contain ingredients for the meals selected and does not come with energy-dense snacks that people may buy if they went to the shops, thereby helping the consumer to limit discretionary foods as indicated in the AGHE.*



**Question 5c.**

Marks	0	1	2	Average
%	45	32	23	<b>0.8</b>

A suitable response could have included the following:

- Comfort foods can increase a sense of wellbeing, such as when consuming chocolate or chicken soup. Although discretionary foods, such as chocolate, should be consumed sometimes and in small amounts, as outlined in the 'Australian Guide to Healthy Eating', they can form part of a healthy diet.

**Question 6a.**

Marks	0	1	2	3	4	Average
%	33	23	19	12	13	<b>1.5</b>

A suitable response could have included some of the following:

- Mouth:
  - carbohydrates are broken down into simple sugars by the enzyme salivary amylase and the digestion of carbohydrates begins
  - chemical digestion commences when salivary amylase begins to break polysaccharides and disaccharides into their component parts, dextrans and monosaccharides
- Small intestine:
  - enzymatic hydrolysis occurs and carbohydrates are broken down into simple sugars by the enzyme pancreatic amylase
  - enzymatic hydrolysis completes the breakdown of the carbohydrates into simple sugars: glucose, fructose and/or galactose

**Question 6b.**

Marks	0	1	2	3	Average
%	41	18	19	22	<b>1.2</b>

A suitable response could have included the following:

Where carbohydrate absorption occurs	Description of the absorption process
first section of the small intestine (duodenum)/small intestine	Villi and microvilli projections absorb glucose through their outer single cell wall into blood capillaries then into the bloodstream. Cells lining the small intestine absorb glucose into blood capillaries then into the bloodstream via veins and arteries.

**Question 7a.**

Marks	0	1	2	Average
%	41	41	18	<b>0.8</b>

A suitable response could have included two of the following:

- no use of artificial chemicals such as synthetic pesticides and fertilisers
- uses natural systems

- no use of genetically modified organisms
- no hormones or growth promoters.

**Question 7b.**

Marks	0	1	2	3	4	Average
%	11	17	28	19	24	<b>2.3</b>

A suitable response could have included one of each the following.

- Challenge:
  - requires more time to develop new skills and knowledge
  - more labour intensive than conventional farming, therefore can be time consuming and costly to produce
  - less productive with smaller crops
  - fruit and vegetable crops may have blemishes that are not appealing to retailers or consumers
  - restriction on the type of fertilisers, herbicides, pesticides and pest control methods that can be used
- Advantage:
  - good for agriculture, health and environmental sustainability
  - working with nature/nature is more integrated with farming/biodiversity/ecosystem-based approach so it is better for the environment
  - soil health is improved
  - livestock can be raised in stress-free conditions without the use of antibiotics or growth hormones

**Question 8a.**

Marks	0	1	2	Average
%	8	44	48	<b>1.4</b>

A suitable response could have included two of the following:

- reducing food waste
- potential for increased consumption of fresh foods as they are cheaper
- create a more educated community/education for family members that fruits and vegetables do not have to appear perfect to be healthy
- purchasing these fruits will support farmers.

**Question 8b.**

Marks	0	1	2	3	4	Average
%	43	19	29	4	6	<b>1.2</b>

A suitable response could have included two of the following:

- Energy used in transportation may come from non-renewable resources and release carbon dioxide into the atmosphere, adding to greenhouse gas emissions.
- Packaging is required for the transportation of the product range, and may not be biodegradable when disposed of, ending up in landfill.
- Refrigeration may be required during transportation, using non-renewable resources and producing gases that affect the ozone layer.

This question was not well answered.

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

*Transporting the Odd Bunch product range of fruit and vegetables through trucks uses up non-renewable resources including oil and petrol which ultimately restricts environmental sustainability from being achieved.*

*The use of trucks to transport these fruits and vegetables also emits carbon dioxide into the atmosphere. These carbon dioxide emissions add to greenhouse gases, meaning that they contribute significantly to climate change and global warming.*

### Question 8c.

Marks	0	1	2	3	4	5	Average
%	11	19	28	25	13	4	2.2

A suitable response could have included the following:

- Social media includes a range of digital avenues/sites to get information such as blogs, Instagram, Twitter, etc.
- Social media creates more and different information for consumers.
  - broader reach focused on the consumer using algorithms (e.g. friends' likes)
  - personalised information (e.g. what friends like, previous purchases). Friends may purchase the Odd Bunch product and post positive comments or forward information to friends
  - marketing of products based on a consumer's social media profiling provides alternative product information influencing consumer choices
  - social media is widespread and far-reaching. Most consumers are linked into some form of social media, exposing them to more products or alternative choices such as the Odd Bunch
- Food information can be shared and shaped toward consumers' food information needs and wants.
- Alters the consumer's range of choices by providing alternatives to full-priced fruits and vegetables.
- Social media perception. It is considered contemporary and young, and positions Woolworths differently in the mind of the consumer.
- Leads to making instantaneous purchases.

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

*Social media plays a significant role in shaping food information and influencing consumers' choice in regard to the Odd Bunch. Social media platforms such as Instagram and Facebook can advertise and promote the Odd Bunch range to a vast range of consumers. This ensures that a high number of people are aware of the new range. The use of these social media platforms can entice consumers to purchase fruits and vegetables from the Odd Bunch based on reviews and personal experiences from other social media users. Not only do peer reviews of the Odd Bunch on social media influence the food choices made by consumers, but the endorsement of this range by celebrities such as Jamie Oliver also have a significant impact. As Jamie Oliver is affiliated with Woolworths it is expected that his opinion and experience with the Odd Bunch will be shared abundantly through social media, and this will also encourage consumers to choose these fruits and vegetables.*

**Question 9**

Marks	0	1	2	3	4	Average
%	34	17	27	10	12	1.5

A suitable response could have included two of the following:

- workshops to upskill people in low-income areas on how to select and cook cheaper foods, focusing on fresh fruit and vegetables, grains and legumes
- education of families/households on how to plan and prepare nutritious meals that meet their budget, especially in low-income areas
- subsidies on certain food products such as fresh fruit and vegetables, grains and legumes (e.g. dollar milk)
- establishing community gardens in low-income areas
- establishment of food banks using donations from supermarkets, restaurants and other sources
- teaching of skills and knowledge to cook cheaper but nutritious foods
- establishing legislative controls on the cost of basic nutritious food products
- campaigns to educate households on cheap nutritious foods and eating in season to cut down on food bills
- food relief schemes such as food vouchers for nutritious foods
- increase advertising of nutritionally beneficial foods and meals that are culturally diverse
- school-based interventions to educate students and involve parents and caregivers on how to select and create healthy and affordable meals
- location of affordable and healthy shops/supermarkets in low-socioeconomic areas
- time and mobility to food outlets, such as greater public transportation
- use of genetic modification – increases crop yield, therefore a lower cost for low-income families.

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

*Subsidizing healthy foods: The Aust. Govt could place subsidies on wholegrains, fresh vegetables and fruits, dairy and lean meats. This would allow low income Australians a higher chance of affording such foods and Community classes could be run to teach these families how to cook these foods, increasing equity and access, preventing food insecurity. Subsidies could also encourage farmers to grow these foods, as price is protected.*

*Food Banks: Food banks provide food for low income families. They rely on donations from restaurants, supermarkets and the public. This would allow low income families to access sufficient food, at low or no cost and increase their food security as their ability to access safe, healthy, nutritious food is assisted by Food Banks.*

**Question 10a.**

Marks	0	1	Average
%	17	83	0.9

A suitable response could have included one of the following:

- There has been an increase in the average daily grams per person of legume consumption by Australians between 2011 and 2017.
- The percentage of consumers eating legumes has increased.
- There has been an increase in the average daily serves per person from 2011 to 2017.

**Question 10b.**

Marks	0	1	2	3	4	Average
%	17	14	27	15	27	2.2

A suitable response could have included one of each of the following.

- Cultural norms:
  - increased number of migrants who are vegetarian, accounting for the increased legume consumption
  - a shift in cultural norms towards vegetarianism
  - ‘Meat-Free Monday’, encouraging people to change their eating habits and increasing their consumption of legumes
  - increased availability of different types of legumes in supermarkets due to increased migration
- Education:
  - people are becoming more informed about healthy eating and the importance of legumes in the diet, resulting in increased legume consumption
  - increased use of legumes in recipes, in magazines and on TV shows
  - knowledge about healthy eating and legumes being low in fat, high in fibre and good for gut health
  - knowledge about how to access legumes, such as purchasing canned and ready-to-use legumes
  - knowledge about how to prepare legumes (e.g. recipes)
  - education about the low cost of legumes as a protein source

**Question 11**

Marks	0	1	2	3	4	5	6	7	8	9	10	Average
%	13	13	18	16	13	10	7	5	3	2	1	3.2

A suitable response could have included the following.

- crop yield/nutrient-dense/food security:
  - genetic modification of food products to increase yield/tolerate extreme weather conditions
  - higher yield, more food available
  - rising population and impacts of climate change – Grain X is a viable crop for future production due to its high yield and tolerance to extreme weather conditions
  - nutrient-dense grain enabling people to have access to safe and sufficient food that meets their dietary needs
- fertilisers and pesticides/environmental sustainability:
  - less nitrogen released into the atmosphere. Nitrogen is a major air pollutant that contributes to acid rain
  - most fertilisers are high in nitrogen and can leach into the soil if not used by growing plants, which increases the level of soil acidity
  - soil acidification can damage the water-holding capacity of the soil and stunt crop growth
  - overuse of artificial chemicals can contaminate freshwater systems used by people, animals and adjacent waterways that may have a sensitive ecosystem
  - by having a reduced use of artificial chemicals in primary food production of Grain X there is a decreased environmental impact, which allows for natural ecosystems and biodiversity to be maintained.

- water:
  - less water will be extracted from groundwater supplies, decreasing the risk of salinity
  - decreased risk of soil acidification as a result of reduced water required, reducing land degradation
  - rainfall reduction due to climate change, making Grain X more suitable
- genetically modified (GM) technology:
  - more efficient production (e.g. requires fewer resources such as water)
  - drought tolerance
  - tolerance to pests
  - salinity tolerance
  - higher temperature tolerance
  - resistance to fungus and virus pathogens
- ethical concerns:
  - the cost of producing GM crops – the grain may be unaffordable to purchase for low-socioeconomic communities
  - can reduce the effectiveness of antibiotics or cause new allergens
  - genetic pollution of organic crops in the area and issues from cross pollination
  - socioeconomic impact of small-scale farmers not being able to afford to produce the GM crop
  - produces tougher weeds, which may become more widespread
  - reduces natural crop biodiversity
  - can have a negative impact on local insects and wildlife.

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

*There has been significant debate regarding a recent genetically modified cereal crop known as Grain X. There are numerous benefits regarding its nutritional properties as it is extremely nutrient dense as well as the reduced amount of resources required to produce the grain. However, many people argue that there is an ethical issue regarding the process of genetic modification.*

*Grain X could heavily contribute to the improvement of global food security due to its increased yield and nutritional density. Food security is defined by the Agriculture Organisation to occur when all people, at all times have physical, social and economic access to a safe, sufficient and nutritious food supply to meet their dietary needs and food preferences for an active and healthy life. Due to the increased nutrient content of Grain X compared to rice, and the higher yield, the production of Grain X can assist in providing global food security for all people as they would be able to consume highly nutritious foods made from this grain, decreasing the incidence of malnutrition, hunger and some nutrient deficiencies, and there would be more Grain X available for food production.*

*The production of Grain X in agriculture could potentially improve environmental sustainability as a result of the reduced requirement of agricultural chemicals including fertilizer, pesticides and herbicides. Many fertilisers are high in nitrogen and this can leach into the soil if not used while the crops are growing, and this increases the level of soil acidity. Acidic soil can result in poor crop growth. Other artificial chemicals can contaminate fresh waterways and rivers, if overused and also affect environmental sustainability. As Grain X only requires 13 kg of fertilizer per hectare compared to the 20kg required by rice crops the potential for improved environmental sustainability is increased as less nitrogen and other chemicals are left in the soil and less impact on natural biodiversity. Less water is required per hectare and with climate change resulting in less rainfall in many areas Grain X would be more suitable to grow.*

*Many people are concerned about the ethics of producing Grain X due to the use of genetic modification. The process involves altering the genetic material of a plant or animal by*

*duplicating, removing or inserting a specific gene in order to improve its characteristics. Due to this recent advance in agricultural technology, the implications on human health of consuming genetically modified crops such as Grain X are of great concern to the skeptics of the new cereal crop as it could reduce the effectiveness of some antibiotics or cause new allergens. As well as this many people are concerned about the lack of control over genetically modified crops. It cannot be stated with confidence the genetically modified crops such as Grain X will grow in a controlled manner. Many farmers are worried about cross-pollinating or cross-breeding with non-genetically modified crops grown in the same area. This could affect organic crops and result in the growth of tougher weeds. Genetically modified grains are more expensive to purchase, and this could cause problems for low socioeconomic farming communities.*