

# 2017 VCE Food Studies examination report

## General comments

The 2017 Food Studies examination assessed students' knowledge and understanding of Areas of Study 1 and 2 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 2017 Food Studies examination.

Students demonstrated a good understanding of the following areas of the study design:

- environmental effects of food processing and manufacturing, retailing and consumption in Australia in regard to food wastage
- patterns of eating in Australia in relation to changes and trends in food purchasing and consumption behaviours
- role of food in expressing connectedness
- ways in which social factors across Australia influence food choice
- interrogation of marketing terms on food packaging.

The following areas need more focus:

- answering extended-response questions
- biological reasons for differences in dietary requirements
- criteria used when assessing validity of food information and claims made by weight-loss companies
- definition of global food security and explanation of possible pathways to achieving food security
- explanation of sequential processes of the digestion of protein
- key elements of regulatory food standards relating to nutrition content claims and health claims on food labels and in advertisements
- principles of research used in the development of the *Australian Dietary Guidelines*
- understanding the nutritional rationale of the *Australian Dietary Guidelines*
- use of appropriate food science terminology to describe chemical changes related to dextrinisation, caramelisation and the Maillard reaction.

## 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	12	32	6	50	Nutrition content claims are optional.
2	34	18	46	3	Using leftover foods will help eliminate food waste, which can have a negative environmental impact.
3	10	18	17	54	Of the options given, the small intestine was the only option where enzymatic hydrolysis of food occurs.
4	2	79	10	9	
5	12	67	4	16	
6	8	0	4	88	
7	7	90	1	2	
8	2	7	83	7	
9	81	1	2	16	
10	21	4	64	11	
11	17	75	3	4	
12	5	11	76	8	
13	94	3	1	3	
14	37	6	36	21	Three different types of fibre (soluble, insoluble and resistant starch) were represented in option C.
15	55	3	2	40	

## Section B

### Question 1a.

Marks	0	1	2	Average
%	22	33	46	1.3

- contributes to an increase in greenhouse gases
- resources used to produce the food (activities in the food system), such as land, fuel, pesticides, fertilisers and transportation are wasted
- contributes to landfill
- loss of biodiversity – i.e. overfishing

**Question 1b.**

Marks	0	1	2	3	4	Average
%	4	3	12	14	67	<b>3.4</b>

Students were required to select two activities from the four listed in the stem of the question.

A suitable response could have included one way from two of the following activities:

- primary production, including farming
  - oversupply/not enough demand for food/unable to sell to manufacturer, for example, ‘incorrect’ shape/size/colour, storm damaged
  - lack of suitable equipment to harvest/store/transport food
  - insect infestations of crop, resulting in need to destroy crop
- processing and manufacturing
  - discarding food due to ‘incorrect’ shape/size/colour
  - lack of suitable equipment to harvest/store/transport some foods, for example, if produce is larger than usual
- retailing
  - discarding food due to ‘incorrect’ shape/size/colour
  - discarding food due to best-before and use-by dates
  - discarding food due to damage/changes in packaging
- household and consumer behaviour
  - not using leftovers
  - buying/preparing too much food
    - not checking pantry/fridge before shopping
    - two-for-one deals, upsizing, larger packet is cheaper
  - not handling food correctly, for example, leaving on bench rather than in refrigerator
  - not understanding best-before and use-by dates
  - purchasing takeaway/convenience food rather than using food in the home
  - not having the skills/knowledge to use foods that are beginning to perish, for example, make soup/stock

**Question 2a.**

Marks	0	1	2	3	4	Average
%	39	28	20	7	6	1.2

A suitable response could have included the following factors.

Digestive organ	Chemical digestion of protein
stomach	<ul style="list-style-type: none"> <li>releases stomach acid/gastric acid/gastric juices (digestive fluid) containing hydrochloric acid</li> <li>hydrochloric acid activates pepsin (digestive enzyme)</li> <li>begins breakdown/denaturation (digestion) of proteins into amino acids</li> </ul>
small intestine	<ul style="list-style-type: none"> <li>pancreas secretes pancreatic juices into small intestine</li> <li>contains digestive enzymes: protease/peptidase/proteinase/proteolytic enzymes such as trypsin and chymotrypsin</li> <li>enzymatic hydrolysis</li> <li>breaks down (digestion) proteins into amino acids and peptides</li> </ul>

Students were required to explain the digestion of protein in both the stomach and the small intestine.

This question was not well answered.

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

Digestive organ	Chemical digestion of protein
stomach	<i>Pepsin is released amongst the digestive juices and activated by Hydrochloric acid in the stomach which begins the breakdown of protein into amino acids</i>
small intestine	<i>Pancreatic protease is released from the pancreas into the small intestine where it breaks down the proteins further into amino acids and peptides.</i>

**Question 2b.**

Marks	0	1	2	3	Average
%	27	35	26	13	1.3

A suitable response could have included the following:

- biological reasons for difference related to age/stage of growth: adolescence is a rapid growth stage, at 2–3 years of age the rate of growth is slow and steady
- demands of growth increase the need for protein and/or many nutrients found in this food group such as iron, vitamin B<sub>12</sub>, iodine and omega-3 fatty acids
- protein is required for growth of muscles, blood, connective tissue, bones, and hormones that occur during adolescence
- protein can supply a secondary source of energy – required for growth and activity

In order to get full marks:

- students needed to include differences in stages of growth in both age groups
- protein or another nutrient needed to be linked to growth.

This question was not well answered.

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

*Adolescence is a time of rapid growth in the human lifespan. Between 14 and 18 the body needs 2 ½ serves of proteins a day to ensure growth and maintenance can occur, as well as accommodating high levels of physical activity. Females aged between 2 and 3 are at a time of far less physical activity, as well as a period of slow, steady growth.*

### Question 3a.

Marks	0	1	2	3	4	Average
%	22	26	27	14	12	1.7

Chemical reaction	Why the reaction occurs
dextrinisation	<ul style="list-style-type: none"> <li>• starch (in flour) and dry heat</li> <li>• starch converts to dextrin (resulting in browning)</li> </ul>
Maillard reaction	<ul style="list-style-type: none"> <li>• protein/amino acids and starch in flour/sugar and dry heat (students needed to mention both protein/amino acids and starch)</li> </ul>

### Question 3b.

Marks	0	1	2	Average
%	35	40	25	0.9

A suitable response could have included the following:

- caramelisation (a type of browning) has occurred in the fruit bread
- the fruit bread contains mixed fruit (natural sugar) and added sugar
- sugars break down when subjected to high temperatures using dry heat

### Question 4a.

Marks	0	1	2	3	4	Average
%	6	6	21	15	52	3

A suitable response could have included two of the following:

- increase in the number of Asian Australians – increased demand for familiar foods such as vegetables
- exposure to Asian vegetables and how to prepare them – for example, on television shows, in supermarkets, on social media, in restaurants
- increase in fusion cuisine/cooking – for example, Asian-style/European-style food such as Asian vegetables used in pasta
- consumers now have the confidence to buy a greater variety of vegetables because of the influence of cooking shows, recipe books and blogs
- increase in availability – farmers diversifying; in mainstream supermarkets

- inexpensive and more affordable, therefore appealing to consumers and can be used more frequently
- manufacturers using them in food products
- easy to prepare – e.g. stir-fry, steam, etc.
- trends in food selection
- increasing awareness of the health benefits of green vegetables

**Question 4b.**

Marks	0	1	2	3	Average
%	23	33	27	17	1.4

The focus of this answer should have been on the nutritional rationale of the *Australian Dietary Guidelines* in relation to eating a variety of food from within each food group (in this case, the vegetables and legumes group).

A suitable response could have included a combination of the following:

- A healthy diet requires a full range of nutrients to be consumed.
- Different vegetables provide different nutrients.
- A mixture of vegetables is more likely to provide a diet with complete proteins.
- Asian vegetables are mostly green and only provide certain nutrients.

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

*Consumers should consume vegetables of different types and colours, not just Asian greens. Different coloured and types of vegetables contain different nutrients such as beta carotene in carrots for Vitamin A. Eating a range of vegetables reflects guideline 2 – a wide variety of foods from all the food groups and vegetables are one of the food groups. This will form part of a healthy diet.*

**Question 4c.**

Marks	0	1	2	3	4	Average
%	22	25	26	14	13	1.7

A suitable response could have included two of the following:

- vegetables provide bulk/fibre in the diet without high kilojoules
- bulk in diet can replace other high-kilojoule foods and decrease the risk of obesity, constipation and related lifestyle diseases
- five serves or a greater number of vegetables can assist in a feeling of satiety
- provides the range of nutrients required for many body functions to occur correctly
- provides the range of antioxidants required for many body functions to occur correctly
- vegetables are low in fat, which reduces kilojoule intake to assist in preventing obesity

The focus of the answer should have been on enhancing good health and preventing obesity and related lifestyle diseases by consuming the recommended number of serves of vegetables. Stating the number of serves was not necessary.

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

*Consuming the recommended serves of vegetables means that we will be consuming foods that are low in fat and kilojoules. Vegetables provide a variety of nutrients needed for good health and also contain some antioxidants needed for bodily functions. They contain high levels of fibre which assists in good health, helping eliminate waste from the body and decrease the risk of bowel cancers. Vegetables have a low glycemic index and this gives a feeling of satiety, preventing us from snacking on high fat, salt or sugar foods. The guidelines state we should eat*

*at least 5 serves a day and as they are low in risk factor nutrients eating them helps prevent lifestyle related diseases.*

**Question 5a.**

Marks	0	1	2	3	Average
%	8	45	31	15	1.6

A suitable response could have included the following:

Males were closer to meeting the recommendations for three of the five food groups shown on the graph provided:

- grains (cereals)
- milk, yoghurt, cheese and alternatives
- lean meat and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans

**Question 5b.**

Marks	0	1	2	3	Average
%	20	26	34	21	1.6

Suitable responses could have included the following:

- being offered the same healthy foods a number of times
- food being prepared/cooked in different ways
- breeds familiarity with nutritious foods
- if the only foods that are offered to children are healthy, then repetition will help in establishing the child's acceptance of those foods
- repeating exposure of previously disliked/unfamiliar foods broadens the variety of food choices of children
- repetition leads to healthy foods becoming a regular part of the child's and/or family's meal plan
- repetition can make it easier to plan healthy family meals

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

*Repetition is a key principle for children to ensure they can familiarize themselves with new, uncommon, initially unpleasant tastes and textures. It is important for parents to be encouraging and support their child by continually giving them a new food they may have refused earlier. These healthy food choices such as fruits and vegetables can then be included in meals that are planned to feed all the family members and establish healthy diets.*

**Question 5c.**

Marks	0	1	2	3	4	Average
%	16	18	29	25	13	2

The response needed to link to one of the following food groups and be about how the food group/food is portrayed in the media and how this can influence consumers' food choices.

- grains (cereals)
- vegetables and legumes/beans
- fruit
- milk, yoghurt, cheese and alternatives
- lean meat and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans

Suitable responses could have included the following:

- discussion about either positive and/or negative influences of the media and how this shapes food information and influences consumers' food choices including:
  - marketing and advertising
  - news reportage (magazines, newspapers, journal articles)
  - popular culture (for example, cooking shows on television)
  - social media (blogs, Facebook)

Popular examples included:

- promotion of gluten-free products
- celebrity chefs who promote a particular ingredient, product or brand on their cooking shows, in their books or in advertisements in magazines or blogs
- grains used in breakfast cereals – 'breakfast of champions', 'fuel for champions'
- PETA/animal welfare – an alternative protein to meat and/or dairy products because of ethical concerns about farming of animals
- promotion of bananas/mandarins in the media, featuring the health benefits of consuming these foods
- promotion of milk, yoghurt, cheese and alternatives in the media, featuring health benefits of consuming these foods.

This question was not well answered.

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

*Dairy*

*Media such as TV, magazines and marketing promotes dairy by informing consumers of the calcium and Vitamin D content of products such as milk and yoghurt. This shapes the views of consumers as they become more informed and would purchase and consume more dairy in order to obtain these nutritional benefits. Furthermore, marketing of milk has accentuated the fact that they are 'local and fresh' and 'Australian', appealing to consumers as they are safe and produced in their own country and making them feel good about purchasing the product as they are supporting local farmers. Recently Chobani yoghurt has shifted their promotion to social media platforms, such as Instagram, to spread awareness. Use of colours and information about health benefits encourages a wider audience of consumers who view these platforms to purchase their product.*

**Question 6a.**

Marks	0	1	2	Average
%	30	35	35	1.1

Suitable responses could have been a statement that included:

- all individuals have food security
- access to food all the time
- the food is suitable for their individual nutritional needs

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

*Global food security is the concept that all people, in all places, at all times, have economic, social and physical access to an adequate amount of food to satisfy their individual nutritional needs.*

**Question 6b.**

Marks	0	1	2	3	Average
%	39	11	20	31	1.4

Suitable responses could have included one of the following:

- development of bio-pesticides or biogas, which are safer than traditional farm chemicals, to improve agricultural outputs
- computer modelling – assess status of soil, crops and farming systems to support decision-making about more efficient/effective food production
- genetic modification technology – this involves the use of technology to improve the production of foods by:
  - an increase in plant/animal production/more sustainable foods/crops/more efficient production, for example:
    - require fewer resources such as water/drought tolerance
    - tolerance to pests
    - salinity intolerance
    - higher temperature intolerance
    - resistance to fungus and virus pathogens
  - nutritional bio-fortification to produce healthier foods, for example, foods with added/enhanced nutrition and less demand on agricultural resources to produce healthy foods
  - an increase in safer foods

Other technologies used in food production could have been one of the following:

- technology to unlock soil banks to access stored nutrients from past decades of fertiliser application to increase agricultural activity/food production
- online resources to develop knowledge about agricultural practices and food production and health, for example, apps (for smartphones or other digital devices) to provide information about effective/efficient agricultural systems
- nanotechnology to improve delivery of nutrients and chemicals in agricultural systems to improve food production
- satellites/drones – providing information about crop data and improving productivity
- access to international technologies to increase the research capacity (close the gap in knowledge) about effective/efficient agricultural practices
- use of technology to strengthen agricultural practices to improve food production such as:
  - gathering data to link genetic information about plant/animal growth and predictive climates
  - gathering data about less suitable agricultural areas and potential new crops/animals
  - technologies to use alternative sources of energy such as solar, wind, hydropower, biofuels and geothermal for agricultural production and improve food production where fossil fuel energy may not be readily available

One mark was awarded for the identification of one technology that could be used in food production, and two marks were awarded for the description of how the technology improves food production capacity.

This question was not well answered.

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

*Drones can be used to improve food production in Australia. Drones work by allowing farmers to easily check and monitor crops for the highest possible yield (i.e. more food production). They*

*can give farmer information about any pests that could damage/destroy the crops. Drones are an efficient way for farmers to keep records of their crops and higher yields could increase production of the crop and enable some of it to be exported, as a contribution to global food security.*

**Question 6c.**

Marks	0	1	2	3	4	Average
%	27	22	26	14	11	1.6

Suitable responses could have included some of the following:

- by providing opportunities to acquire and consume nutritious/healthy foods, for example, through Food Rescue or community programs
- adequate facilities for storage, preparation and cooking of food, for example, fridge at home
- regular availability of food within shops/supermarket
- skills to cook cheaper foods
- subsidies on certain foods
- education about making appropriate food choices
- upskilling of migrants on local ingredients, preparation methods and language
- price, quality and variety of available food
- time and mobility to shop and prepare food
- availability of fresh, nutritious food on a regular basis
- provision of transport of food, for example, resources such as enough money, access to transportation to nearby supermarkets
- location of food outlets/supermarkets.

Responses needed to include discussion about both food access and distribution to at-risk groups in Australia.

This question was not well answered.

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

*Food security could be achieved by improving equity in food access and distribution for these at-risk groups by donating excess food from supermarkets and restaurants to shelters and other charity organisations that prepare foods like 'Second Bite'. That look at preparing foods for these at-risk groups like the low-income and the homeless. Supermarkets could look at selling foods that don't meet their high standards, and instead of wasting these foods they could be donated or sold at cheaper prices to low income families. For geographically isolated communities, volunteers could transport foods or else transport companies could donate their services to deliver fresh foods on a regular basis to central places to prevent high prices and lack of availability. Foods from local farms could be offered locally. New arrivals could be taught in their own language about the foods available, healthy diets and how to cook the food now they are in Australia.*

**Question 7a.**

Marks	0	1	Average
%	60	40	0.4

A suitable response could have included: A nutrition content claim is a claim about the content of certain nutrients or substances in a food.

**Question 7b.**

Marks	0	1	2	Average
%	52	19	29	<b>0.8</b>

The two levels of health claims are:

- general-level health claim
- high-level health claim.

**Question 7c.**

Marks	0	1	2	Average
%	60	38	3	<b>0.5</b>

- Research/scientific evidence is required (to prove that the health claim existed and that there was scientific proof/a link that the ingredient had a health benefit such as a biomarker).
- Food must meet nutritional requirements (according to Nutrient Profiling Scoring Calculator).

This question was not well answered.

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

*Scientific evidence to back up the health claim.*

*The food must contain the correct nutritional content to make the claim.*

**Question 8**

Marks	0	1	2	3	4	5	6	Average
%	14	14	23	22	13	9	5	<b>2.5</b>

Answers should have focused on how climate change may affect the environmental sustainability of primary food production in Australia. Areas to explore included:

- decrease in food production
- decrease in biodiversity
- changes to farming methods – types of crops/animals.

Suitable responses could have included some of the following:

- climate scientists predict that land and sea temperatures across Australia will increase as a result of climate change, affecting current primary food production regions
- rainfall patterns will alter and rainfall will decrease in many of the most important food-producing areas. This will have an impact on crop growth and will decrease yields
- less water will be available for irrigation, affecting beef and sheep production in particular
- more water will be extracted from groundwater supplies, increasing the risk of salinity and decreasing the viability of land for food production
- increased risk of soil acidification as a result of reduced water supplies, leading to land degradation
- land degradation will increase as soils become drier and will lead to wind and water erosion, reducing the viability of soils for primary food production
- some crops will not be viable in regions where they have been traditionally grown – stone fruit and berries may only be grown in southern states
- aquaculture may be at risk as sea temperatures rise.

This question was not well answered.

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

*Climate change is defined as the change in weather patterns as well as changes in ocean levels, land surfaces, ice sheets and other aspects of the environment. Climate change is a risk to the environmental sustainability of primary food production as heavy rain, high temperatures and other dramatic changes can cause the destruction of agriculture and the inability to grow crops. It can also affect livestock, and the way they grow and what they can eat especially on organic farms. The animals may not be able to cope with increased heat. Climate change can also cause soil acidification and salinity which can destroy nutrients in the soil, making crops harder to grow, and cause less yield for farmers to sell and manufacturers to produce and consumers to buy. It also affects future crop production as seeds often find it hard to grow as the soil is affected. Heavy rains can also affect the soil and impact on pasture or crop growth. Agricultural chemicals can be washed into waterways and impact on biodiversity.*

### Question 9a.

Marks	0	1	2	3	4	5	Average
%	8	9	24	28	20	11	<b>2.8</b>

Suitable responses could have included some of the following:

- making a link with the farmer/grower of the food and the goals of supporting local farmers and producers and the consumer's values of buying locally produced foods.
- consumers' values concerning environmental issues – reducing food miles and economic issues regarding supporting the Australian/local economy
- highlighting that it is a family farm and that the consumer is supporting this particular Australian family by buying the product. Traditionally, Australians are supportive of farming and feel strong cultural attachment to agriculture
- using a number of members of the family, i.e. generations of the family, to show how the manufacturer is supporting an extended family and that the family has a long connection with farming and a commitment to providing produce for local/Australian families. Links to sustainability of farming
- using a font similar to handwriting to make it more personal
- the consumer is encouraged to spread the word by using the hashtag '#buyhomegrown'
- the consumer is encouraged to develop a connection with the family and the local produce, and can encourage repeat or regular purchasing of the product
- giving the consumer the area where the produce is grown, making the consumer feel more connected to the family and the product. The consumer values knowing where their produce comes from
- providing a statement of thanks on the can for buying home-grown to separate the product from imported canned produce that is often cheaper in price.

Responses were required to link to consumers' values and goals.

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

*The image included on the front of the tomatoes depicts three generations of a family. There is a label above this 'The Weeks Family' and this appeals to a consumer's sense of family values. Consumers like to know where their food comes from and this is shown by the Made in Australia words. Included on the right hand side is a message thanking the consumer for 'boosting the economy' and for letting the Weeks family continue to provide your family with the best Aussie tomatoes. This message and the kangaroo label plays on the Australian, patriotic psyche, furthered by the laid-back nature of the image. Many consumers value buying Australian and feel good about supporting and connecting to Aussie Farmers. Rather than attending a farmers'*

market, these messages on the label make consumers feel connected with the hashtag # buy homegrown and the inclusion of the growing region Nanneella a town in Victoria.

**Question 9b.**

Marks	0	1	2	3	4	Average
%	31	13	20	14	22	1.9

A suitable response could have included one challenge and one advantage from the following:

**Challenges**

- scepticism whether food needs are being met/lack of research to evaluate the impact and large-scale application of low-impact farming
- often small-scale/grassroots, so production output is not sustainable for the population
- requires more knowledge and labour than conventional farming, therefore can be time-consuming and expensive
- takes time to learn new skills/knowledge
- indigenous farming knowledge is often devalued and eroded
- can be more expensive than conventional farming

**Advantages**

- working with nature/nature more integrated with farming using techniques such as intercropping, planting perennials, water harvesting and resource recycling that are more beneficial to the environment and health of soil
- biodiverse/ecosystem-based approach, so better for the environment
- good for agriculture, health and environmental sustainability

This question was not well answered.

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

*Challenge: Low impact farming can need more labour than conventional farming and can be time consuming and expensive to establish. The amount of crops produced can be less than conventional farming, therefore less income.*

*Advantage: Low impact farming, particularly methods like no-till farming, greatly improve soil health by reducing erosion and possible soil acidity by leaving natural plant matter in the ground after harvest.*

**Question 10a.**

Marks	0	1	2	3	Average
%	6	8	27	59	2.4

A suitable response could have been one of the following:

- education:
  - knowledge about healthy eating
  - how to access healthy food
  - how to prepare healthy food
- available time: the family may not have time to source healthy food options and shop around for better prices or seasonal produce, therefore they may not eat the healthiest options. They may not have the time to prepare healthy meals and may instead use pre-packaged meals, which may be less healthy
- accommodation

- availability of resources to store/prepare foods at home; for example, refrigerator to store food; oven, cooktop and microwave to cook food. This could influence the quality of the food selected. If not able to store and prepare fresh, healthy produce, then may select pre-prepared, processed food or fast food that is higher in kilojoules and less healthy

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

*Available time influences a family's food choice. If a family is generally low in time in the evenings and cannot prepare a home-cooked meal every night, they may resort to pre-prepared meals which are less healthy but time efficient. In other cases, family's food choices could be take-aways, to make up for less time which is bad as takeaway dinners are typically high in sugar, salt, fat and can lead to diet related diseases.*

#### Question 10b.

Marks	0	1	2	3	Average
%	10	17	40	33	2

A suitable response could have included:

- Food can link families together and create a family bond.
- Specific foods can become family favourites that are shared on special occasions. These foods can create a connection between the family members, strengthening the family bond. For example, a particular chocolate cake to celebrate a birthday or recipes based on family culture.
- Food is often used by a community group to unite and strengthen the bonds between different groups in the local community. Through sharing foods from another culture, community members are able to highlight the similarities between them, such as the use of similar ingredients or cooking techniques or to discuss the differences, for example, in spices used in each cuisine. Food, therefore, becomes a tool through which communities can come together, and get to know each other and share experiences.

#### Question 11

Marks	0	1	2	3	4	5	6	7	8	9	10	Average
%	21	13	14	15	12	9	6	4	3	2	1	2.9

Students were required to include in their response how the principles of research that were used in the development of the *Australian Dietary Guidelines* could be applied to a new low-cost weight loss meal replacement product, and how they could apply criteria to assess the validity of the claims made by the manufacturer about the product.

The following information could have been included in students' responses.

Principles of research include:

- recognition of credible sources
  - refers to trustworthy, non-biased independent sources, for example, government authorities
  - difficult to ascertain whether sources of research for the product are credible and independent
  - no evidence of literature reviews
  - information provided on social media is not necessarily credible
  - terminology not representative of *Australian Dietary Guidelines*
- evidence-based information

- refers to best available research from a systematic collection of data using reliable, high-quality methodology
- information provided about the product does not provide any indication that it uses evidence-based information, for example, no supporting research referred to, no data of research provided, no publications of research in high-quality journals is provided to review sample size, length of research, current research (such as within the last 10 years) not presented
- accurate analysis of data
  - refers to ensuring research and its method are dependent on the collected data and its analysis
  - limited data provided to determine effect of the product on a cohort being researched
  - integrity of data is not supported – only some customers' claims of losing 3 kg
  - data is more reliable if large numbers are researched; for example, is the 3 kg lost per week sustainable?
  - no evidence of using data from numerous high-quality studies. Consistency of results is required to make generalisations
  - long-term results add credibility to data

Criteria used when assessing validity of claims made by weight-loss and nutrient supplement manufacturers

- commercial gain
  - to make a profit – the more product the company sells, the more profit they make
  - marketed as low cost to entice customers to purchase initially and then become repeat customers
  - the product could possibly contain the same nutrients that can be found in fresh food – for example, protein, vitamins, minerals, fibre – but in a processed form, making the cost per gram of the nutrients much higher than if natural fresh foods were purchased by the consumer. This creates greater profit margins for the manufacturer
- ethics – refers to being morally correct
  - terminology such as 'fat burner' and 'carbohydrate blocker' is not scientifically correct and are examples of emotive language
  - says that the product is produced according to 'good manufacturing practices' but does not elaborate what 'good' is. Tries to imply that it is ethical but is not supported by evidence
  - celebrity endorsements are misleading. Celebrities are not necessarily overweight or regular consumers of the product. They are often paid to promote a product
  - implies that if you use the product you could look like a celebrity
- effectiveness of the product – refers to showing credible evidence of whether the product works
  - short-term verses long-term benefits
  - not sustainable healthy eating patterns
  - does not follow evidence-based *Australian Dietary Guidelines* research. Being a healthy weight is about eating amounts of nutritious foods and drinks to meet energy needs, i.e. enjoying food, not nutrients, or replacing food with supplements.

This question was not well answered.

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

*As we know the Australian Dietary Guidelines aim to promote a balanced, healthy diet. Meal replacement shakes may not be either balanced or assist in consuming a healthy diet. The Australian Dietary Guidelines were reviewed in 2013 to reflect latest scientific evidence and over 55,000 pieces of objective scientific data, including public consultations and evidence from World Cancer Research fund. Consumers should be cautious of the research provided by the manufacturer about product X, as it should be substantiated by rigorous reviews and data and there is no evidence of this in the statement 'backed by research'. The website may provide details of any studies carried out but these need to be sourced and referenced correctly. Is there evidence based information? Are there graphs to support claims?*

*The manufacturer claims that some customers lost 3 kgs in one week and this is rapid which often means consumers are likely to gain the weight back when consuming product x stops. Product x is a meal replacement, not a diet and exercise plan which is what the Australian Dietary Guidelines promote. Product x claims to be a 'fat burner' and the guidelines promote exercise to assist in maintaining a healthy weight. The product is also backed by celebrities, however these testimonials may not be accurate as celebrities may have been paid to sponsor the product and they are not health professionals. Is this ethical?*

*Product x does not adhere to the Guidelines, especially guideline 2 which tells us to eat a wide variety of foods from the five food groups in order to obtain adequate nutrients and energy needs for growth and maintenance of our bodies. This product claims to be a 'carbohydrate blocker', however carbohydrates are necessary for the body to provide energy and fibre as part of a healthy diet. Consumers may experience loss of energy and suffer from a lack of essential vitamins and minerals.*

*Criteria to assess the validity of this product you should consider are for example, is the company looking to make a big profit? What are their objectives? What proof is there about the company's good manufacturing practices? Advertising on social media limits the consumers that will be aware of product x and has this been done deliberately because the readers may be strongly influenced by what media portrays as desirable body image?*

*The language used in the marketing of product x should also be analysed. For example, are they using emotive language to try and persuade consumers? Are they using terms that people may not understand?*

*Ensure the information provided is credible before you purchase this product and check if all the claims are valid. Ask yourself if product x will provide you with sustainable healthy results.*