

## 2016 HSC Food Technology Marking Guidelines

### Section I

#### Multiple-choice Answer Key

Question	Answer
1	D
2	A
3	B
4	C
5	C
6	A
7	B
8	C
9	D
10	B
11	D
12	D
13	A
14	C
15	D
16	A
17	D
18	C
19	A
20	C

**Section II****Question 21 (a)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Correctly identifies ONE quality management system used in food production</li></ul>	1

*Sample answer:*

HACCP

**Question 21 (b)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Provides characteristics and features of how a quality management system assists the food manufacturer to achieve foods that are safe for public consumption</li></ul>	4
<ul style="list-style-type: none"><li>• Sketches in general terms a quality management system which assists the food manufacturer to achieve foods that are safe for public consumption</li></ul>	2–3
<ul style="list-style-type: none"><li>• Provides general information on a quality management system</li></ul>	1

*Sample answer:*

HACCP is a seven point process that is used to identify hazards and manage risks during the production of food. Critical control points (CCPs) are identified and limits are set to ensure food safety is maintained. This may include temperature limits or storage times. The CCPs are monitored and a set of actions undertaken to prevent unsafe food from reaching the public, for example chicken that has been stored for more than three days may be discarded.

**Question 22**

<b>Criteria</b>	<b>Marks</b>
• Makes evident the relationship between experimental conditions and expected results	5
• Provides characteristics and features of some expected results	3–4
• Sketches in general terms some expected results	2
• Provides general information on food spoilage	1

***Sample answer:***

Dish 1 will turn brown as a result of oxidation.

Dish 2 will not brown as readily, as the addition of acid delays food spoilage by inhibiting enzymes.

Dish 3 will eventually turn brown but will have reduced exposure to air so spoilage will be delayed.

Dish 4 will maintain quality for a longer period of time as the enzymes have been deactivated by the blanching process.

After five days there may be evidence of microbial contamination such as mould on all pieces of apple due to the moisture content of the food.

All uncovered apple slices could be subject to infestation and microbial contamination.

**Question 23 (a)**

Criteria	Marks
• Provides characteristics and features of the activities conducted at the idea generation and screening stage of developing the chocolate product	3
• Sketches in general terms activities conducted at the idea generation and screening stage of developing the chocolate product	2
• Provides general information on food product development	1

**Sample answer:**

The company may conduct market research to identify consumer demands and gaps in the market. They may also research items in the media or in recipe books. Teams may come together to build ideas cooperatively.

**Question 23 (b)**

Criteria	Marks
• Provides appropriate information on strengths, weaknesses, opportunities and threats in relation to the development of the chocolate product	4
• Provides appropriate information on strengths and/or weaknesses and/or opportunities and/or threats in relation to the development of the chocolate product	2–3
• Identifies a strength/weakness/opportunity/threat in relation to the development of the chocolate product or provides general information on SWOT analysis	1

**Sample answer:**

S	A multinational company has access to a range of resources
W	There may be consumer resistance to new technologies such as edible packaging
O	The edible packaging is unusual and offers a unique marketing opportunity
T	There are many chocolate products already well established in the market

**Question 23 (c)**

<b>Criteria</b>	<b>Marks</b>
• Makes a relationship between marketing strategies and the new chocolate product	5
• Provides characteristics and features of marketing strategies for the new chocolate product	3–4
• Sketches in general terms a marketing strategy for the new chocolate product	2
• Names a strategy for promotion	1

***Sample answer:***

The company could give away free samples of the new chocolate product at railway stations as this would expose a new group of people to the product.

Penetration pricing could also be used to encourage people to try the new chocolate product. This strategy, along with that above, may tempt consumers to try the chocolate product and as a result switch to a new brand. This creates a new customer base for the company and, in turn, increases profitability.

Celebrity endorsements could be used to encourage people to try the new chocolate product. The choice of celebrity should be linked to the target market. This is effective because the consumer values and identifies with the profile of the celebrity.

**Question 24 (a)**

Criteria	Marks
• Completes table with appropriate level of operation or example	2
• Provides some appropriate levels of operation or examples	1

**Sample answer:**

<i>Level of operation</i>	<i>Example</i>
Household	Jams sold at local markets
Multinational	McDonalds
Small business	Local pizza shop
Large company	Woolworths

**Question 24 (b)**

Criteria	Marks
<ul style="list-style-type: none"> <li>Identifies issues and provides points showing the positive and/or negative effects of gender issues on employment in the various sectors of the Australian food industry</li> <li>Uses specific examples to support answer</li> </ul>	5
<ul style="list-style-type: none"> <li>Provides characteristics and features of gender issues which have an effect on employment in sector/s of the Australian food industry</li> </ul>	3–4
<ul style="list-style-type: none"> <li>Sketches in general terms some gender issues which have an effect on employment in sector/s of the Australian food industry</li> </ul>	2
<ul style="list-style-type: none"> <li>Provides general information related to gender issues and/or employment in the Australian food industry</li> </ul>	1

**Sample answer:**

Anti-discrimination and equal opportunity legislation aim to reduce the impact of gender on employment. Maternity leave, carers leave and equal pay are aimed to make positions accessible and appealing to both sexes. Gender difference, however, still seems to have a role in determining the workforce composition across the various sectors.

Traditionally, women are seen as the primary caregivers and this has resulted in a high level of female employment in the food retail sector which provides opportunities for part-time and casual work. The food service and catering and agriculture and fisheries sectors rely heavily on shift work, resulting in a dominance of male employees.

Employers sometimes offer incentives to attract a particular type of employee. Women in leadership programs are developed to help women access promotion positions. Some employers provide childcare with the aim of keeping mothers in the workforce.

Physiologically men have a higher percentage of muscle tissue than women and this has resulted in more men being employed in roles which have many physical demands. Some of these include farming and fishing.

**Question 25 (a)**

Criteria	Marks
<ul style="list-style-type: none"> <li>Identifies issues and provides points showing the positive and/or negative effects of changes to trade policy on the Australian food industry</li> </ul>	4
<ul style="list-style-type: none"> <li>Provides characteristics and/or features of changes to trade policy in the Australian food industry</li> </ul>	2–3
<ul style="list-style-type: none"> <li>Provides general information on trade policy in the Australian food industry</li> </ul>	1

***Sample answer:***

The revision of trade policy has a range of effects on the Australian food industry. Free trade agreements may include the removal of trade barriers, changes to tariffs and quotas and adjustments to subsidies. This opens up the import and export market and means that Australian producers need to become more competitive in the production, pricing and quality of their products. It provides the opportunity for producers to enter new markets and increase their sales.

There can be both positive and negative effects. For example, fruit producers may lose sales because they are competing against imported products that may be produced at cheaper rates due to lower labour costs. Consumers will benefit from cheaper prices.

Local producers may be concerned about the introduction of disease through the importing of fresh produce. Consumers may also be concerned about food safety standards that are not in line with Australian standards.

On the other hand, primary producers such as cattle farmers may be able to capitalise on increased quotas and reduced tariffs by increasing their exports. There will also be opportunities for Australian producers to enter new markets by producing innovative and unique products such as Hi Maize and Barley Max and then exporting overseas.

**Question 25 (b)**

<b>Criteria</b>	<b>Marks</b>
• Provides characteristics and features of storage conditions and distribution systems required for fresh fruit and vegetables for export	5
• Provides characteristics and/or features of storage conditions and/or distribution systems required for fresh fruit and vegetables for export	3–4
• Sketches in general terms storage conditions and/or distribution systems required for fresh fruit and vegetables	2
• Provides general information on fresh fruit and vegetables	1

***Sample answer:***

Ethylene scavengers may be used to inhibit over-ripening and loss of quality. The optimum storage temperature during transport should be between 0–4°C.

Each type of fruit and/or vegetable would need to be stored in appropriate packaging to prevent damage during transportation. For example, apples would need to be in laminated boxes to provide strength and protect from moisture during export.

The quickest distribution mode, air transport, would be ideal for the export of fresh fruit and vegetables. A refrigerated train or truck would be required to distribute the food to warehouses or shopping centres.

**Question 26 (a)**

Criteria	Marks
<ul style="list-style-type: none"> <li>Recognises and names a diet-related disorder that may develop if the diet were to be continued into adulthood</li> </ul>	1

**Sample answer:**

Obesity

**Question 26 (b) (i)**

Criteria	Marks
<ul style="list-style-type: none"> <li>Makes evident the relationship between the diet-related disorder identified in part (a) and the physical effects of the disorder</li> </ul>	3
<ul style="list-style-type: none"> <li>Provides characteristics and features of the physical effects of the diet-related disorder identified in part (a)</li> </ul>	2
<ul style="list-style-type: none"> <li>Provides general information about the physical effects of the diet-related disorder identified in part (a)</li> </ul>	1

**Sample answer:**

The physical effects of obesity are far reaching. Increased body size puts pressure on all body parts resulting in fatigue, difficulty in exercising and reduced ability to live a full and productive life. Obesity is generally linked to a diet high in fat, salt and sugar and low in fibre. Such a diet is related to conditions including cardiovascular disease, hypertension, diabetes, certain types of cancers and constipation.

**Question 26 (b) (ii)**

Criteria	Marks
<ul style="list-style-type: none"> <li>Makes evident the relationship between the diet-related disorder identified in part (a) and the economic costs of the disorder</li> </ul>	3
<ul style="list-style-type: none"> <li>Provides characteristics and features of economic costs of the disorder identified in part (a)</li> </ul>	2
<ul style="list-style-type: none"> <li>Provides general information about the economic costs of the diet-related disorder identified in part (a)</li> </ul>	1

**Sample answer:**

Obesity may mean an increased risk of disease and expensive medical treatments may be required. For example, medication to reduce cholesterol levels or treat diabetes is costly. The cost of surgical procedures such as gastric banding and heart disease are other possible expenses.

Obesity may result in time away from work thereby reducing productivity. Obese people may require specialised transport facilities as well as support of carers. Both are significant economic costs to the individual and the government.

**Question 26 (c)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Provides characteristics and features of how social media can be used to promote nutritional health</li><li>• Uses relevant examples</li></ul>	5
<ul style="list-style-type: none"><li>• Sketches in general terms how social media can be used to promote nutritional health</li><li>• Uses relevant example/s</li></ul>	3–4
<ul style="list-style-type: none"><li>• Provides general information on the use of social media to promote nutritional health</li></ul>	2
<ul style="list-style-type: none"><li>• Provides general information on nutrition or social media</li></ul>	1

***Sample answer:***

Social media is a powerful tool that can be effectively used for education and sharing information relating to nutritional health. Facebook, Twitter, Instagram and mobile telephone apps are all interactive and enable individuals to engage instantly with health information and take personal responsibility for their health.

For example, an individual looking for advice on weight loss could engage with an online program such as Michelle Bridges for guidance and support. Twitter, Facebook and Instagram provide a platform for the sharing of up-to-date information from health professionals such as nutritionists which therefore leads to increased consumer awareness and education.

## Section III

### Question 27 (a)

Criteria	Marks
• States target market suitable for the drinking yoghurt and gives a supporting reason	2
• Names a target market suitable for the drinking yoghurt	1

**Sample answer:**

Working adults may be a target market as this product provides an appropriate snack option for their busy lifestyle. The drinking yoghurt is shelf-stable and does not require refrigeration, therefore it could be safely kept in a desk office drawer or handbag.

### Question 27 (b)

Criteria	Marks
• Makes evident a relationship between active non-nutrients in the drinking yoghurt and the benefit to health	5
• Provides characteristics and features of the role of active non-nutrients in the drinking yoghurt	3–4
• Sketches in general terms the role of active non-nutrients used in the drinking yoghurt	2
• Provides general information on nutrients related to drinking yoghurt	1

**Sample answer:**

Active non-nutrients are substances that are not essential for life but contribute to good health or enhance body functioning. Two active non-nutrients in the yoghurt are fibre and probiotics.

Fibre in the yoghurt may be in the form of inulin which swells in the gut and contributes to a feeling of fullness, preventing overeating. Fibre also plays an important role in preventing constipation and a high fibre diet may also prevent colon cancer.

Probiotics such as lactobacillus provide the human gut with good bacteria and help maintain a healthy gut flora. Probiotics may prove beneficial in reducing the incidence of digestive disorders such as irritable bowel syndrome.

**Question 27 (c)**

Criteria	Marks
<ul style="list-style-type: none"> <li>Identifies the main features of a suitable package, including materials to be used, and shows a relationship to the success of the product</li> </ul>	8
<ul style="list-style-type: none"> <li>Provides characteristics and features of a suitable package and materials suitable for the product</li> </ul>	6–7
<ul style="list-style-type: none"> <li>Sketches in general terms packaging features and/or materials suitable for the product</li> </ul>	4–5
<ul style="list-style-type: none"> <li>Identifies features of the package and/or materials for the product</li> </ul>	2–3
<ul style="list-style-type: none"> <li>Provides general information on packaging</li> </ul>	1

**Sample answer:**

Functional and appealing packaging features are important to the success of the yoghurt. It is essential that the package meets legislative requirements for labelling if it is to be sold. This means that the package should include details such as a name, manufacturer information, ingredient list and nutrition panel. All of the information should be clearly legible.

Making the package stackable and focusing on shelf appeal will mean that the product will stand out on the supermarket shelf and encourage sales. Convenience in packaging design such as an easy opening drinking spout will add to consumer satisfaction and hence sales. Tamper-evident packaging will assist in maintaining safety.

The choice of packaging materials is particularly important for a shelf-stable product. For consumer safety, there should be no reaction between the product and the packaging materials. The materials need to be able to withstand the heat treatment required to sterilise the product to allow it to be stored at room temperature. Materials should be lightweight yet strong and durable to meet the demands of transport by both the manufacturer and consumer. The materials need to be printable to display the information listed above and to allow for an appealing package.

## Section IV

### Question 28

Criteria	Marks
<ul style="list-style-type: none"> <li>Shows a strong relationship between the response of sectors of the Australian food industry to lifestyle changes and environmental concerns</li> <li>Provides a logical and cohesive response using appropriate terminology and relevant examples</li> </ul>	13–15
<ul style="list-style-type: none"> <li>Shows a relationship between the response of sectors of the Australian food industry to lifestyle changes and/or environmental concerns</li> <li>Provides a logical and cohesive response and/or uses appropriate terminology and/or relevant examples</li> </ul>	10–12
<ul style="list-style-type: none"> <li>Provides characteristics and features of how sectors of the Australian food industry have responded to lifestyle changes and/or environmental concerns</li> <li>Provides a logical and cohesive response and/or uses appropriate terminology and/or relevant examples</li> </ul>	7–9
<ul style="list-style-type: none"> <li>Sketches in general terms ways in which sector/s of the Australian food industry have responded to lifestyle changes and/or environmental concerns</li> </ul>	4–6
<ul style="list-style-type: none"> <li>Provides general information on sector/s of the Australian food industry and/or lifestyle changes and/or environmental concerns</li> </ul>	1–3

#### *Sample answer:*

Sectors of the Australian food industry have responded to lifestyle changes and environmental concerns in a number of ways. There have been many changes made to our food supply that reflect consumer trends and a growing awareness of environmental sustainability.

The agriculture and fisheries sector has introduced aquaculture as a means of breeding seafood in a controlled environment to protect wild species. Fish are also able to be bred to plate size in response to demand by consumers and restaurants for plate-sized whole fish. Other environmentally friendly production methods such as line and pole fishing help to minimise by-catch and therefore provide environmental benefits.

The food service and catering sector, including restaurants and cafes, constantly review their practices, menus and items sold to ensure consumer satisfaction. The sector has responded to more meals being eaten outside of the home in many ways. Menus now cater specifically for a range of dietary requirements such as gluten free. They often reflect consumers' desire for foods without chemicals, such as organic foods, and outlets provide take-away options for consumers 'eating on the run'. Extended opening hours also cater to busier lifestyles. With an increased awareness and concern for environmental issues, many businesses in food service and catering use recyclable packaging and serve free-range products such as eggs and chicken.

The food manufacturing/processing sector has responded to lifestyle changes by producing many convenience products that save consumers time. Products such as microwavable meals, pre-cut vegetable packages, home meal replacements and ready-to-eat options, cater to busy lifestyles and a decrease in cooking skills experienced by many in the community. Biodegradable packaging is also used in this sector to minimise the contribution of food packaging to landfill.

At a retail level, supermarkets have responded in a number of ways. On-line shopping provides a convenient method of food purchase and delivery for time poor consumers. Major supermarkets have also extended their range of product options to cater to consumers' willingness to try new foods and also their desire for nutritious foods. For example, it is now possible to purchase freshly made sushi at many supermarkets. Supermarkets are now 'one-stop options' where it is possible for consumers to purchase a wide range of product types in one location, such as meat, fruit and vegetables, again saving time. Reusable shopping bags and charging customers for plastic bags are strategies used by retail outlets to address consumer concerns about the use of plastic shopping bags which are non-biodegradable and not environmentally sound.

# 2016 HSC Food Technology Mapping Grid

## Section I

Question	Marks	Content	Syllabus outcomes
1	1	Characteristics of processing equipment	H1.1
2	1	Types of food product development	H1.3
3	1	Organic farming	H1.2
4	1	Preservation process	H4.2
5	1	Steps in food product development	H1.3
6	1	Social and cultural practices	H2.1
7	1	Sectors of Australian food industry	H1.2
8	1	Pasteurisation	H1.1
9	1	Drivers of food product development	H2.1
10	1	Dietary supplements	H3.2
11	1	Steps in food product development	H1.3
12	1	Food additives	H4.2
13	1	Working conditions	H1.2
14	1	Genetically modified foods	H1.2
15	1	Legislation	H1.2
16	1	Internal factors relating to food product development	H1.3
17	1	Food allergies	H3.2
18	1	Active non-nutrients	H3.2
19	1	Supplementation/fortification	H2.1
20	1	Processing equipment	H1.1

## Section II

Question	Marks	Content	Syllabus outcomes
21 (a)	1	Quality management systems	H1.1
21 (b)	4	Quality management systems	H1.1
22	5	Causes of food spoilage	H4.2
23 (a)	3	Steps in food product development	H1.3
23 (b)	4	SWOT analysis	H1.3
23 (c)	5	Marketing plans	H1.3
24 (a)	2	Levels of operation	H1.2
24 (b)	5	Gender issues	H1.2
25 (a)	4	Government policies	H1.2
25 (b)	5	Storage and distribution	H4.2
26 (a)	1	Diet-related disorders	H2.1

<b>Question</b>	<b>Marks</b>	<b>Content</b>	<b>Syllabus outcomes</b>
26 (b) (i)	3	Physical effects of diet-related disorders	H2.1
26 (b) (ii)	3	Economic effects of diet-related disorders	H2.1
26 (c)	5	Media, marketing and ethical issues	H2.1

**Section III**

<b>Question</b>	<b>Marks</b>	<b>Content</b>	<b>Syllabus outcomes</b>
27 (a)	2	Target markets	H1.3
27 (b)	5	Active non-nutrients	H2.1
27 (c)	8	Packaging materials	H1.1

**Section IV**

<b>Question</b>	<b>Marks</b>	<b>Content</b>	<b>Syllabus outcomes</b>
28	15	Sectors of Australian food industry, environmental concerns, lifestyle changes	H1.2, H1.4, H1.1, H1.3, H5.1