

2018 HSC Food Technology Marking Guidelines

Section I

Multiple-choice Answer Key

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

Section II

Question 21 (a)

| Criteria | Marks |
|--|-------|
| <ul style="list-style-type: none"> Correctly states how food additives are identified on a food label | 1 |

Sample answer:

The use of the international numbering code.

Answers could include:

- Use of the coding system
- Use of a numbering system.

Question 21 (b)

| Criteria | Marks |
|--|-------|
| <ul style="list-style-type: none"> Correctly recognises THREE additives | 3 |
| <ul style="list-style-type: none"> Correctly recognises TWO additives | 2 |
| <ul style="list-style-type: none"> Correctly recognises ONE additive | 1 |

Sample answer:

| Additive | Use |
|----------------------|---|
| <i>Preservatives</i> | Inhibits the growth of bacteria and mould in foods. |
| <i>Humectants</i> | Absorbs moisture from the atmosphere and to prevent food from drying out. |
| <i>Emulsifiers</i> | Allows oil and water to be combined in a product so that they do not separate during storage. |

Question 22 (a)

| Criteria | Marks |
|---|-------|
| <ul style="list-style-type: none"> • Recognises and names a value added potato-based product • Provides basic information on how this product meets consumer demand | 2 |
| <ul style="list-style-type: none"> • Provides some relevant information | 1 |

Answers could include:

Products may include:

- Potato gems
- Hash browns
- Mashed potato – fresh, frozen, dehydrated
- Frozen chips
- Snack crisps.

Potato gems could be:

- Purchased easily from a supermarket
- Kept in the freezer and reheated for convenience
- Resealed and stored for an extended period of time
- Used by consumers with limited cooking skills.

Question 22 (b)

| Criteria | Marks |
|--|-------|
| <ul style="list-style-type: none"> Shows clear relationships between consumer protection and food labeling laws Provides relevant examples | 4 |
| <ul style="list-style-type: none"> Shows relationships between consumer protection and food labeling laws Provides example(s) | 3 |
| <ul style="list-style-type: none"> Shows a relationship between consumer protection and food labelling | 2 |
| <ul style="list-style-type: none"> Provides some relevant information | 1 |

Sample answer:

Food labelling needs to provide consumers with **name or description of the food**. The name or description is mandated by the Food Standards Code and provides consumers with a guarantee of what is in the food.

Product recall information protects consumers if they have a product that has been contaminated with foreign matter or is unsafe for consumption. This needs to be in English and needs to provide Australian contact details. This is of particular relevance for imported products. This protects the consumer who has purchased the product as they are able to receive a refund. This also protects all consumers if a batch wide recall is required as a public safety issue.

Country of origin information protects consumers who wish to ensure that their purchases are from Australian-made products.

Answers could include:

The **ingredient list** needs to be legible, and the ingredients presented in descending order. This protects consumers so that they can check if they are getting what they think that they are purchasing, eg if the product description says that the product is strawberry yoghurt, the consumer can expect to see that strawberries (not strawberry flavour) are listed as an ingredient. Additives are to be listed by class name and international code. This protects consumers who may have an intolerance.

Information for allergy sufferers allows consumers to ensure that the food product is allergen free.

Date marking provides confidence that the product is safe for consumption and value for money spent.

A statement of quantity allows consumers to get value for money. The statement is to be accurate and the measuring equipment needs to be certified to be within tolerances.

Nutritional information panel allows consumers to investigate the nutritional composition of the food. This is useful for those who are monitoring sugar, fat or salt consumption.

Question 23 (a)

| Criteria | Marks |
|--|--------------|
| • Provides a one-day meal plan that includes a variety of items that have active non-nutrients | 3 |
| • Provides a meal plan that includes some menu items that have active non-nutrients | 2 |
| • Provides some relevant information | 1 |

Sample answer:

Breakfast: Muesli served with blueberries and yoghurt

Lunch: Soy and linseed bread roll with homemade minestrone soup with tomatoes and dried peas/beans

Dinner: Grilled pork and sauerkraut, carrots, peas and baked potatoes

Snacks, morning or afternoon tea – such as a handful of nuts or a muesli bar.

Question 23 (b)

| Criteria | Marks |
|---|-------|
| • Provides a detailed explanation of the role of TWO of the active non-nutrients of the menu items in the meal plan | 6 |
| • Provides an explanation of the role of TWO of the active non-nutrients of the menu items in the meal plan | 5 |
| • Provides a description of the role of TWO of the active non-nutrients | 4 |
| • Provides some description of active non-nutrients and/or the role of active non-nutrients | 2–3 |
| • Provides general information about nutrition | 1 |

Sample answer:

Dietary fibre is found in the muesli, blueberries, the bread roll, dried peas/beans, sauerkraut, carrots, peas and nuts. The role of dietary fibre is to promote the feeling of fullness and aid in the process of digestion moving the gut contents along. This can lead to a reduction of the chance of developing cancers of the digestive system. The insoluble dietary fibre remains unchanged while passing through the digestive system, while the soluble fibre is digested by the bacteria in the large intestine.

The colour components of fruit and vegetables are the carotenoids and flavonoids: these are antioxidants. The berries, carrots, tomatoes and other fruit are high in these. Lycopene in the tomatoes is associated with protective factors against prostate and breast cancers.

Answers could include:

The soy and linseed roll contains phytoestrogens. These may reduce the incidence of prostate and breast cancers and the effects of menopause for women.

The yoghurt and sauerkraut contain probiotics which are associated with improved digestive health as they contain healthy bacteria that thrive in the large intestine, reducing the chance of developing bowel cancer.

Question 24 (a)

| Criteria | Marks |
|--|-------|
| • Provides detailed information on the causes of food spoilage for TWO food products | 6 |
| • Provides information on the causes of food spoilage for TWO food products | 5 |
| • Provides some information on the causes of food spoilage for TWO food products | 4 |
| • Provides some information about food spoilage for the food product(s) | 2–3 |
| • Provides general information about food spoilage | 1 |

Sample answer:

Milk:

Causes of food spoilage are:

- Environmental factors: light can cause the degradation of Vitamin A and riboflavin and the development of off flavours.
- Enzymes (eg lipase): can lead to the degradation of milk fats causing off flavours.
- Microorganisms: naturally occurring bacteria found in milk can lead to a deterioration of quality of the milk. These bacteria can be destroyed by pasteurisation.

Apples:

Causes of food spoilage are:

- Environmental factors: apples are susceptible to infestation from a range of insects. If the flesh of the fruit is exposed to oxygen, oxidative browning occurs.
- Enzymatic activity. Enzymes are responsible for the enzymatic browning which brings about an undesirable colour change. Enzymes are also involved in the ripening process. The fruit continues to ripen after picking as these enzymes are still active. This can lead to the fruit over-ripening and spoiling.
- Microbial contamination: Apples are subject to both bacteria and mould infections.

Answers could include:

Fish:

Causes of spoilage are:

- Environmental factors – water deteriorates the cell quality
- Enzymes – they continue the aging process of the flesh
- Microbial contamination – bacteria.

Question 24 (b)

| Criteria | Marks |
|--|-------|
| <ul style="list-style-type: none"> Provides extensive information about a preservation process that would extend the shelf life for each of the two foods selected in part (a) | 6 |
| <ul style="list-style-type: none"> Provides thorough information about the preservation process that would extend the shelf life for each of the two foods selected in part (a) | 5 |
| <ul style="list-style-type: none"> Provides sound information about the preservation process that would extend the shelf life for each of the two foods selected in part (a) | 4 |
| <ul style="list-style-type: none"> Provides some information about the preservation process that would extend the shelf life of food(s) selected in part (a) | 2–3 |
| <ul style="list-style-type: none"> Provides general information about food preservation | 1 |

Sample answer:

Milk is pasteurised – Pasteurisation involves the product being heated to 65°C and held at this temperature for 30 minutes and then cooled to below 4°C. This heat process kills pathogenic (disease causing) bacteria. This process relies on temperature control throughout the process. The high temperature kills the pathogenic microorganisms but the temperature is not such to sterilise the product. The temperature of the product is then dropped to below 4°C so as to limit further microbial growth. The product is then packaged and sealed to exclude air.

Apples can be canned which is a process involving heat, exclusion of air and sterilisation. The heating process deactivates enzymes to stop the ripening process and any further heating will destroy any further bacteria that have come in contact with the apples. The cans are sterilised by that heating process; the double seam canning material is resistant to the penetration of microorganisms that would cause further deterioration during storage.

Question 25 (a)

| Criteria | Marks |
|---|-------|
| • Provides characteristics and features of a line extension | 2 |
| • Provides general information about food product development | 1 |

Sample answer:

This product is a line extension of an existing product. The line extension includes the same flavours and concept but incorporates ice-cream.

Answers could include:

Me-too product – because it is a copy of a market competitor’s product.

Question 25 (b)

| Criteria | Marks |
|--|-------|
| • Identifies the target market and provides a relevant justification | 2 |
| • Provides information about the target market for this product | 1 |

Sample answer:

The target market for this product is an individual/family with a higher disposable income. This product may be purchased as a treat as it is not a necessary product and uses discretionary spending.

Answers could include:

The customer may purchase this product for a special occasion. This may fit into one of the following categories: dual income no kids or well off older folk. This is a person who is not concerned about their weight or who has no particular nutritional requirements (eg lactose intolerance).

Question 25 (c)

| Criteria | Marks |
|---|-------|
| • States a pricing structure suitable for the product and gives a supporting reason | 3 |
| • Provides information on a pricing structure suitable for the product | 2 |
| • Provides general information on pricing | 1 |

Sample answer:

Penetration pricing is where a company sets an initially low price designed to capture market share. Penetration pricing will encourage consumers to select this ice-cream product over market competitors. Once market share has been established the food manufacturing company may then increase the price.

Answers could include:

- Price skimming, where a product is sold at a relative high price at first and then the price falls over time – used when a product is new to the world and has no other competition
- Premium pricing
- Competitive pricing
- Psychological pricing.

Question 26 (a)

| Criteria | Marks |
|---|-------|
| <ul style="list-style-type: none"> • Discusses ethical issues of different advertising campaigns targeting children • Provides the positive and/ or negative impacts of food advertising campaigns on the diet and health of children • Provides relevant examples | 6 |
| <ul style="list-style-type: none"> • Identifies ethical issue(s) of different advertising campaigns targeting children • Provides the positive and/or negative impact(s) of food advertising campaign(s) on the diet and/or health of children • Provides some relevant examples | 4–5 |
| <ul style="list-style-type: none"> • Sketches in general terms issues related to advertising campaign(s) targeting children • Sketches in general terms the impact(s) of food advertising campaigns on the diet and health of children | 2–3 |
| <ul style="list-style-type: none"> • Provides general information about advertising campaigns targeting children and/or children’s health | 1 |

Answers could include:

- Ethical issue – normalising of the consumption of high fat/sugar foods during the cricket season eg KFC – chicken buckets.
- Placement of fresh fruit at the door of the supermarket. Good positioning as compared to chocolate at checkout. Encourages the inclusion and consumption of healthy foods in the diet.
- Ethical issue of children selecting foods that have been handled by other children (food safety ethics).
- Advertising of high fats/sugar foods has been banned during peak viewing times for children on TV yet children can be specifically targeted through social media.
- Jamie Oliver is attracting adult audiences who buy foods for their children from Woolworths – appealing to their conscience when buying ‘healthier foods’ – he is advertising for Woolworths, so is the aim to make our kids healthy or increase Woolworths’ market share? Woolworths is also promoting free fresh fruit for children in store – which is often bruised or undersized.
- The sip and crunch campaign for schools encourages a piece of fruit and water during breaks – a positive health initiative because it encourages the consumption of water to rehydrate that is not full of sugar and the consumption of fruit to add fibre to the diet.
- McDonald’s campaigns on their efforts to promote their meals as healthy choices – which are actually full of sugar. They also promote themselves through sports sponsorships – they give to charities and encourage children’s meals (full of salt and fat) by including toys which promote pester power, encouraging parents to purchase these meals which are not necessarily healthy food choices (as they are high in salt and low in fibre).

Question 26 (b)

| Criteria | Marks |
|---|-------|
| <ul style="list-style-type: none"> Provides detailed information about dietary disorders that children may experience Makes clear links between high energy diets and dietary disorders | 6 |
| <ul style="list-style-type: none"> Provides information about dietary disorders that children may experience Makes clear links between high energy diets and dietary disorders | 5 |
| <ul style="list-style-type: none"> Provides some information about dietary disorders that children may experience Makes a link(s) between high energy diets and/or dietary disorders | 4 |
| <ul style="list-style-type: none"> Provides some information about dietary disorder(s) that children may experience | 2–3 |
| <ul style="list-style-type: none"> Provides general information about children’s diets or a dietary disorder | 1 |

Answers could include:

- Foods that are high in energy include both foods high in fats and sugars eg Coca Cola in preference to water, fruit juices, chips, lollies, KFC, McDonald’s Big Macs and cheeseburgers.

Dietary disorders may include:

- Diabetes – type 2 – the body becomes resistant to insulin because of the elevation of blood glucose.
- Obesity – weight gain when energy input does not equal energy output, 20% above the desired body weight.
- Dental caries – tooth decay because of the sugars in the mouth, food additives etc that attack tooth enamel.
- Hypertension – accompanies the diet high in fats/salts/cholesterols (LDLs) (associated with fats) when the BP is above normal range for a period of time –the higher the pressure the greater the risk of heart disease; accelerates plaque formation.

Section III

Question 27 (a)

| Criteria | Marks |
|--|-------|
| <ul style="list-style-type: none"> Provides characteristics and features of production systems used in the food van | 3 |
| <ul style="list-style-type: none"> Provides some characteristics and/or features of production system(s) used in the food van | 2 |
| <ul style="list-style-type: none"> Provides general information about food production | 1 |

Answers could include:

- The production systems would be small scale and manual. The small-scale production system operates on a domestic scale producing a limited production run due to the skill of the food handler. It is less complex in operation and product consistency is difficult to manage.
- The manual aspect of the operation involves the operator carrying out tasks by hand but they are subject to human error. Consistency is difficult to maintain. Example: some preparation tasks: chopping, grating, cooking, plating.

Question 27 (b)

| Criteria | Marks |
|---|-------|
| <ul style="list-style-type: none"> Sketches in general terms information about work, health and safety (WHS) issues associated with working in a food van that sells a range of hot foods Includes relevant examples | 4 |
| <ul style="list-style-type: none"> Sketches in general terms some information about work, health and safety issue(s) associated with working in a food van that sells a range of hot foods Includes relevant example(s) | 3 |
| <ul style="list-style-type: none"> Provides some information about work, health and safety issue(s) associated with working in a food van | 2 |
| <ul style="list-style-type: none"> Provides general information about work, health and safety | 1 |

Sample answer:

Workplace hazards include the physical hazards of heat and hot surfaces. The hot surfaces could come from ovens, pie ovens or hot oil. Also of concern is working in a confined space that exacerbates the risk. Ergonomic hazards are associated with working in a small space and having to bend down to customers when exchanging money and food. Confined spaces can present trip hazards if products are left on the floor or if cupboards/drawers are left open.

A workplace health and safety issue will exist if the employee has not been trained correctly in the use of equipment.

Question 27 (c)

| Criteria | Marks |
|--|-------|
| <ul style="list-style-type: none"> Provides detailed information that identifies the relationship that both the macro and micro environments will have on the sale of food from the van Uses appropriate terminology and relevant examples | 8 |
| <ul style="list-style-type: none"> Provides information that identifies the relationship that both the macro and micro environments have on the sale of food from the van Uses appropriate terminology and/or relevant examples | 6–7 |
| <ul style="list-style-type: none"> Provides characteristics and features of the macro and/or micro environments that affect the sale of food from the van Uses appropriate terminology and/or relevant example(s) | 4–5 |
| <ul style="list-style-type: none"> Sketches in general terms aspects of the macro and/or micro environment | 2–3 |
| <ul style="list-style-type: none"> Provides general information on the sale of food from the van | 1 |

Answers could include:

- Macro (external) environment includes economic, political, ecological, technological – affect the success of the venture.
 - Political environment relates to legislation that affects setting up the venture (food van) – eg local level is health inspectors, all may lead to additional costs for the vendor impacting on profitability.
 - Ecological relates to waste (water, food, packaging) – environmentally-friendly packaging may increase costs.
 - Technological relates to equipment which can increase initial costs but may also increase profitability in the long term due to increased output, such as ordering on-line.
- Micro (internal) environment – personnel expertise, production facilities, financial position, company image.
 - Personnel expertise is important as people bring skills and knowledge to the production, improving quality of food produced and service – even the personality of employees who are serving and producing the food.
 - Financial position is important as if funds are lacking initially then set-up costs may be too high, limiting profitability and possibly leading to business failure.

Section IV

Question 28

| Criteria | Marks |
|--|-------|
| <ul style="list-style-type: none"> • Makes a judgement about how an organisation within the Australian food industry influences individuals, society and the environment • Uses correct terminology and presents a logical and cohesive response • Includes relevant examples | 13–15 |
| <ul style="list-style-type: none"> • Makes evident the relationship(s) between an organisation within the Australian food industry and its influence on individuals, society and the environment • Uses some correct terminology • Includes some relevant examples | 10–12 |
| <ul style="list-style-type: none"> • Provides characteristics and features of an organisation within the Australian food industry that influences individuals and/or society and and/or the environment • Includes example(s) | 7–9 |
| <ul style="list-style-type: none"> • Sketches in general terms the features of an organisation within Australian food industry and its influences | 4–6 |
| <ul style="list-style-type: none"> • Provides general information about the Australian food industry | 1–3 |

Answers could include:

McDonalds is in the food retail sector, selling fast food to consumers at a reasonable price.

Influences on the individual may include – unhealthy food choices, upsizing, employment opportunities for young people, some healthier choices are now an option.

Society – families can eat out at a reasonable cost in a family-friendly environment, OR it can be a negative time with families using drive-through fast food choices for a busy lifestyle; more people employed strengthening the economy OR a drain on the economy due to diet related disorders associated with overconsumption; marketing to capture lifelong customers by sponsoring various sporting activities McDonalds contributes money to charities –(Ronald McDonald House); increase in shift work can have a negative impact on the family.

Environment – lots of packaging waste which is not always recycled by customers, McDonalds source Australian products for their food, they have a good waste reduction program with foods not sold, lots of power is used to power lighting, cooking operations, air conditioning.

In a changing market McDonalds have successfully developed a new food products ‘app’ to order and pick up products.

2018 HSC Food Technology Mapping Grid

Section I

| Question | Marks | Content | Syllabus outcomes |
|----------|-------|--|-------------------|
| 1 | 1 | (FPD) Steps in FPD | H1.3, H4.1 |
| 2 | 1 | (AFI) Emerging technology | H1.4 |
| 3 | 1 | (NUT) Economic costs of malnutrition | H2.1 |
| 4 | 1 | (AFI) Levels of operations | H1.2, H1.4 |
| 5 | 1 | (FM) Packaging | H1.1, H4.2 |
| 6 | 1 | (FPD) Promotion | H1.3 |
| 7 | 1 | (FM) Raw materials | H1.1 |
| 8 | 1 | (FPD) Consumer demands/drivers | H1.3 |
| 9 | 1 | (AFI) Advisory groups | H1.2, H2.1 |
| 10 | 1 | (NUT) Nutritional considerations for specific groups | H2.1, H3.2 |
| 11 | 1 | (NUT) Nutritional considerations for specific groups | H2.1, H3.2 |
| 12 | 1 | (FPD) Distribution systems | H1.3 |
| 13 | 1 | (AFI) Sectors of the agri-food chain | H1.2, H1.4 |
| 14 | 1 | (AFI) Policy and legislation | H1.4 |
| 15 | 1 | (FM) Processes | H1.1 |
| 16 | 1 | (FM) Qualities of food manufacture | H1.1 |
| 17 | 1 | (NUT) Sports drink | H2.1, H3.2, H5.1 |
| 18 | 1 | (FPD) Product planning | H1.3, H4.1 |
| 19 | 1 | (FM) Tubular heat exchange | H1.1 |
| 20 | 1 | (NUT) Nutritional considerations for specific groups | H3.2, H2.1 |

Section II

| Question | Marks | Content | Syllabus outcomes |
|----------|-------|------------------------------------|-------------------|
| 21 (a) | 1 | (FM) Food additives | H1.1 |
| 21 (b) | 3 | (FM) Food additives | H1.1 |
| 22 (a) | 2 | (AFI) Value-adding | H1.2 |
| 22 (b) | 4 | (AFI) Food labelling | H1.2 |
| 23 (a) | 3 | (NUT) Active non-nutrients | H2.1, H5.1 |
| 23 (b) | 6 | (NUT) Role of active non-nutrients | H2.1, H3.2, H5.1 |
| 24 (a) | 6 | (FM) Causes of food spoilage | H4.2 |
| 24 (b) | 6 | (FM) Preservation process | H1.1, H4.2 |
| 25 (a) | 2 | (FPD) Type of FPD | H1.3 |
| 25 (b) | 2 | (FPD) Target markets | H1.3 |
| 25 (c) | 3 | (FPD) Pricing structure | H1.3 |
| 26 (a) | 6 | (NUT) Advertising practices | H2.1, H3.2 |
| 26 (b) | 6 | (NUT) Dietary disorders | H2.1, H3.2 |

Section III

| Question | Marks | Content | Syllabus outcomes |
|-----------------|--------------|------------------------------------|--------------------------|
| 27 (a) | 3 | (FM) Production systems | H1.1 |
| 27 (b) | 4 | (FM) Work health and safety | H1.1 |
| 27 (c) | 8 | (FPD) Macro and micro environments | H1.3 |

Section IV

| Question | Marks | Content | Syllabus outcomes |
|-----------------|--------------|--|------------------------------|
| 28 | 15 | (AFI, FPD, NUT) Influences of an organisation in the AFI | H1.1, H1.4, H3.1, H1.3, H2.1 |