



**B O A R D O F S T U D I E S**  
NEW SOUTH WALES

## **2012 HSC Food Technology 'Sample Answers'**

When examination committees develop questions for the examination, they may write 'sample answers' or, in the case of some questions, 'answers could include'. The committees do this to ensure that the questions will effectively assess students' knowledge and skills.

This material is also provided to the Supervisor of Marking, to give some guidance about the nature and scope of the responses the committee expected students would produce. How sample answers are used at marking centres varies. Sample answers may be used extensively and even modified at the marking centre OR they may be considered only briefly at the beginning of marking. In a few cases, the sample answers may not be used at all at marking.

The Board publishes this information to assist in understanding how the marking guidelines were implemented.

The 'sample answers' or similar advice contained in this document are not intended to be exemplary or even complete answers or responses. As they are part of the examination committee's 'working document', they may contain typographical errors, omissions, or only some of the possible correct answers.

## Section II

### Question 21 (a)

**Sample answer:**

Food Technologist – role is to develop new food products including line extensions to increase market share.

**Answers could also include:**

Suitable career opportunities will depend on the organisation named and studied and may include – Food technologist, Market researcher, Computer technician, Manager, Supplier, Delivery staff.

### Question 21 (b)

**Sample answer:**

A value-added food product has its value or cost price increased by increasing the amount of processing.

- For example an organisation that sells canned fruit could add value to their products by producing mixed-fruit products or a fruit jelly, specifically packaged to fit into a lunch box in response to *healthy convenient products* (health consumer demand).
- Another example could be a butcher who adds value to their meat products by producing ‘heat and eat’ beef stir-fry packs with pre-cut vegetables and sauce included. Such a meal requires limited cooking skills and assists those *families with a busy lifestyle* (convenience consumer demand).

### Question 21 (c)

**Sample answer:**

The development of value-added food products for an organisation could result in generation of profit for the organisation, increased trading opportunities and an increased market share for their target group. In addition, employment levels may increase or decrease due to the development of value-added food products. The increased use of mechanisation, automation and computerisation due to value-added production may result in less use of manual labour or the need for more specialised staff.

Failure of value-added products may reduce profits and lead to reduced market share, loss of company image eg Vegemite and cheese has never been successful.

**Question 22 (a)*****Sample answer:***

Quality control – conducting tests to check the standards of raw materials or products before, during or after production.

**Question 22 (b)*****Answers could include:******Quality control procedure – Sorting (quality)***

The raw cherries would be sorted according to size, shape, texture, colour. This ensures a consistent high quality end product, recognised by the consumer.

***Quality control procedure – Pitting cherries (safety)***

This quality test/check is done to prevent any pits/seeds being left in the product. This would be beneficial to consumers who may chip or damage their teeth or choke.

***Quality control procedure – Fill cans (safety)***

Cans would need to be filled and weighed correctly. Enough headspace would be required to allow for expansion caused by heat.

**Question 23 (a)*****Answers could include:***

- Promote safety
- Keeps food in a form acceptable to the consumer and therefore prevent waste
- Make perishable foods available all year round
- Retain nutritional value of the food
- Achieve economies for the production company

**Question 23 (b)*****Answers could include:***

Any two from below:

Cabinet Drying – water can be removed by placing foods in a dehydrator or oven. Hot air circulates around the food for a given period of time evaporating the water from the food product. This process changes the texture of the food, increases its shelf life and can be done to a range of fruits (apples & pears), herbs (parsley) and meat (beef jerky).

Tunnel Drying – is used on automated production lines. Food moves along a conveyor through a narrow enclosed space for a period of time depending on the characteristics of the food product. Examples of foods dried this way are fruits, vegetables and meats, grains.

Spray Drying – product being dried must be liquid. Liquid is forced through an atomiser that emits a fine spray into heated air. Instant drying occurs and fine powders are produced. Examples include instant coffee, powdered milk and food additives (flavours).

Freeze Drying – is carried out in two different stages. Firstly the food is frozen and secondly the temperature of the food is gradually raised under low pressure. This causes the ice to sublime. Examples include some coffees, teas and herbs, meats, milk, some soups and vegetables.

Sun Drying – need a hot dry climate for eg fish, meats, grains, fruits.

Heavy salting will remove moisture from the flesh of fish. Removal of enough moisture slows down microbial and enzymatic activity for eg fish, meat, tomatoes.

In the same way sugar will remove moisture eg glace fruits, preserved lemons, edible flowers.

**Question 23 (c)*****Sample Answer:***

Sour dough breads require fermentation to create their characteristic flavour. They are made using lactic acid producing bacteria and yeast. The bacteria feed on the carbohydrates (sugars), multiply and create lactic acid. The pH of the food lowers, the flavour sours, the environment becomes unfavourable for other microbes, thereby preserving the food.

***Answers could include:***

- Fermentation is a preservation process that produces alcohol or acid through the action of microorganisms such as yeast, mould or alcohol-producing bacteria. Fermented food products could include yoghurt, salami and sauerkraut.
- Lactic acid bacteria are added at high population to milk. Bacteria use lactose to produce lactic acid. This lowers pH changing flavour and texture. The environment becomes unfavourable for other microbes, thus preserving the food.

**Question 24*****Answers could include:***

Answers drawn from internal/external factors which impact on food product development.

SWOT could include:

- Strengths
- easy access for consumers to purchase
  - range and breadth of products evident
  - lowered operational/retail long term costs
  - appeals to time-poor consumers
- Weaknesses
- costs of setting up initial site
  - how to deliver ‘fresh food’ in a timely and ‘safe’ manner
  - competition from other online sites
  - lack of access to ‘specials’
- Opportunities
- opening up business to a range of new customers
  - direction of available capital funds to market research
  - new products instead of retail outlets (bricks and mortar)
  - quick turnover of products
- Threats
- other competitors follow this trend
  - products not delivered fresh – poor product image can go viral quickly online
  - concerns about food safety
  - unrealistic expectations of consumers

Analysis

The lowered operational/retail costs long term would be a great advantage, however the initial costs of setting up a website and online shopping site may be prohibitively expensive in terms of funds available.

The difficulty in delivering fresh food in a timely and safe state may create huge marketing problems if not addressed carefully, resulting in social media networking quickly destroying company image and credibility.

**Question 25 (a)*****Answers could include: (either/or)***

Line extension – These crisps involve minor changes to extend the company’s range of existing products by incorporating new features.

Me-too product – These crisps are direct copies or minor modifications of existing products in the marketplace eg Smiths Vegemite flavour crisps.

**Question 25 (b)*****Sample answer:***

Nutritionally modified foods are foods that have been altered in some way to improve their nutritional characteristics.

This food product could have additional dietary fibre and antioxidants, with health benefits such as prevention of cancer, constipation and diverticulitis.

Similarly this food product could be modified to have lower levels of saturated fat, and this may provide direct benefits in terms of reduction of cardiovascular disease and overweight/obesity.

Another way this product could be nutritionally modified could include reduction of sodium to minimise hypertension developing.

Other modifications could include using sweet potato (lower GI) reducing risk of diabetes. Using probiotics in the flavour coating could improve gut health.

**Question 26 (a) (i) and (ii)*****Sample answer:***

(i) A body weighing 10 to 19 per cent above the ideal weight is classified as overweight.

(ii) A body weighing 20 percent or more above the ideal weight is classified as obese.

**Question 26 (b)*****Answers could include:***

Obesity can cause significant health problems and increases the risk of developing diet-related conditions. Economic costs associated with this include: cost of hospital treatment, surgery, medicines, absenteeism, toll on ability to work, other health problems that result can be expensive to treat. This is costly to business, individuals and government.

**Question 26 (c)*****Answers could include:***

Overweight and obesity occurs when energy intake is higher than energy used through physical activity. This is more likely to occur with foods that are energy dense (high in fats and sugars). Only 5% of young people met recommendations from Australian Dietary Guidelines which state: limit saturated fat intake, consume moderate amounts of sugars, eat lean meat and eat plenty of vegetables, legumes, fruit and cereals especially whole grains.

Importance of physical activity – only 44% on table meet guidelines – fewer than half exercise enough.

Physical activity is needed to control weight gain.

Sedentary lifestyle of young people has contributed to increased obesity levels eg computer games, use of cars and not walking, watching TV, studying.

Overweight and obesity could be reduced by regular exercise (30 mins × 3 per week) combined with a healthy diet.

## Section III

### Question 27 (a)

*Answers could include:*

Food product – Low fat/high fibre biscuits (suitable for school lunch box)

Identified need – Healthy, nutritious, tasty, easily transportable school snack

### Question 27 (b)

*Answers could include:*

Example: (low fat/fibre biscuits (for lunch box)

Packaging design and materials —

- Small enough to fit in lunch box
  - Easy to open package (for young children)
  - Strong enough to protect biscuits from breakage
  - Resealable to keep fresh uneaten biscuits
  - Bright/colourful to encourage consumption
  - Impermeable packaging material to ensure freshness exclude air/moisture
- Materials suitable for design, rigid, cardboard, outer re-sealable lid (pull off)
- Material selected to provide colourful design features – protect from moisture/absorption of odours etc of other lunch box foods

### Question 27 (c)

*Answers could include:*

Promotional strategies —

- Advertising (eg TV, radio, print media)
- Personal selling
- Sales promotions
- Publicity and Public relations

Ethical issues —

- Advertising which is deceptive eg sold as weight-loss foods
- Use of celebrities to advertise products – not suited to product (models advertising fast foods)
- Packaging and labelling claims which are inaccurate eg recyclable (when not)
- Use of misleading claims



## Section IV

### Question 28

*Answers could include:*

Australian Food Producers:

- Ecologically sustainable production methods
- Organic farming
- Long-term damage done to the environment by excessive use of chemicals, erosion, salinity, land clearing
- Aquaculture versus commercial fishing practices

Australian Food Manufacturers:

- Waste management – pollution of air, water, land
- Packaging practices – recyclable, biodegradable
- Production techniques – control of effluent
- Transportation options – noise, odour