

2009 HSC Food Technology

Sample Answers

This document contains 'sample answers', or, in the case of some questions, 'answer may include'. These are developed by the examination committee for two purposes. The committee does this:

- (a) as part of the development of the examination paper to ensure the questions will effectively assess students' knowledge and skills, and
- (b) in order to provide some advice to the Supervisor of Marking about the nature and scope of the responses expected of students.

The 'sample answers' or similar advice, are not intended to be exemplary or even complete responses. They have been reproduced in their original form as part of the examination committee's 'working document'. While the handwritten notes have been typed for legibility, no further editorial change or addition has occurred.

Section II, Part A

Question 11 (a)

Sample answer/Answers could include:

- (i) Federal– Trade Practices Act 1974, Food Standards Australia New Zealand Act 1991
- (ii) State (NSW)– Food Act 2003, Food Regulation 2004, Occupational Health and Safety Act 2000

Question 11 (b)

Sample answer/Answers could include:

- Trade Practices Act
Breach– selling a product not meeting food standards (labelling requirements)
- OH&S
Breach – not shown how to use meat grinder
– limited protective equipment

Question 11 (c)***Sample answer/Answers could include:***

Steps involved to deal with the food poisoning outbreak (Salmonella) include:

- Recall of meat pies– FSANZ has overall responsibility for product recalls. Meat pies removed from sale and distribution. Manufacturer should have an up-to-date food recall plan.
- NSW Health Department informed of food poisoning outbreak
- Local Environmental Health Officer (EHO) visits premises and food samples collected for chemical and microbial analysis. Compiling a report after inspecting premises and recommending that this business be prosecuted because they fail to meet standards and legislative requirements.
- Interviewing consumers affected
- EHO works with NSW Food Authority to ensure that all pies sold meet labelling and other legal requirements
- EHO involved in educating the manufacturer about food safety and hygiene

Question 11 (d)***Sample answer/Answers could include:***

- Introduction and implementation of Food Safety Plan following HACCP principles
- Awareness of danger zone and critical control points
- Ensure staff are aware that people are potential carriers of food poisoning micro-organisms
- Increases familiarisation with signage
- Hand washing demonstration
- Mentoring of new staff
- Purchase colour coded chopping boards with supportive training and signage
- Auditing and record keeping procedures– outlined to staff
- Include maintenance and service program for continuous upkeep of equipment in a Food Safety Program
- Implementation of a labelling system
- Training on cleaning and sanitising procedures– follow cleaning schedules
- Prepare meat and sauce each day in the morning
- Package, label and date pies sold at factory outlet
- Store meat sauce out of danger zone to prevent food poisoning outbreak
- Wipe down chopping boards used
- Separate colour coded chopping boards
- Modify cleaning procedures and sanitisation of equipment
- Provide PPE to staff such as hair nets and aprons
- Supervision and training with use of meat slicer to avoid injury and costs associated with worker's injury

Question 12 (a)***Sample answer/Answers could include:***

- Packaging contains product. Packaging is important during the distribution and storage of a food product
- Packaging protects products. If physical or mechanical damage is limited or prevented, the product remains acceptable to the consumer
- Packaging preserves food. Packaging minimises or prevents contamination or alteration of the environment of the product that might lead to spoilage (e.g. intrusion of moisture into a dry product)
- Packaging informs the consumer and markets the product. Design helps sell the product while labelling provides legally required information relating to health
- Packaging offers convenience for the consumer (e.g. ability to dispense the product, use of pack to re-heat, etc)

Question 12 (b) (i)***Sample answer/Answers could include:***

- Pasteurised milk – plastic bottle e.g. HDPE
- Fish – tin plated steel
- Apples – paper bag
- Apple – Apple pie – foil, cardboard

Question 12 (b) (ii)***Sample answer/Answers could include:***

Plastic bottle for milk:

- Lightweight – easy for transportation (consumers)
- Difficult to break or shatter and this assists with transportation
- Easy to shape – e.g. handles moulded
- Tamper proof lid – screwtop bottle with no leakage & assists during rigor of transport and stops tampering
- Stacks easily on pallets (square bottles) – frees up valuable storage space
- Easy to apply labels
- Transparent

Question 12 (b) (iii)***Sample answer/Answers could include:***

Plastic & environmental impacts:

- Requires oil (petrochemicals) for manufacture
- Does not easily decompose
- Impacts on wildlife
- Recyclable
- Reusable

Judgements:

- Recycling is only successful if consumers participate in positive curb-side collections
- PET requires non-renewable resources eg, coal and oil to be produced and to recycle which is detrimental to its overall benefits

Question 13 (a)***Sample answer/Answers could include:***

- Primary Research – Consumer needs and wants and preferences for existing products through observations, surveys, store audits and focus groups.
- Secondary Research – ABS statistics on sales of ice confections, analysis of competitors' share of the market.
- Qualitative and Quantitative Research

Market research is needed to confirm consumer needs and wants.

- Primary market research techniques – through observations, and surveys.
Qualitative research is carried out to gauge consumer responses to the concept of frozen, fruit-shaped confection. Small focus groups are used.
Quantitative research involves a larger sample of consumers responding to questionnaires, from which statistical information is drawn. Fastfruit could then decide whether this product concept has the potential to be launched.
- Secondary research can be sourced from established publications i.e. Australian Bureau of Statistics.

Question 13 (b)***Sample answer/Answers could include:***

- Financial – calculating the break even point, forecasting of sales, loans required, cost of ingredients
- Technical – availability of ingredients, new processes and machinery required, use of existing equipment, staff training required, quality assurance processes

A feasibility study is required to check whether the new product will be both technically & financially feasible.

- Technical analysis: can the frozen fruit-shaped confection be made with the same ingredients as the existing fruit juice? Cost of new machinery i.e. snap freezers to be purchased. Factory floor space to accommodate new machinery. Establishing a MACCP flow system and suitable packaging.
- Financial analysis: fast fruit company must determine the expected cost of production and the sales forecast to calculate a break-even point. They must consider cost of raw materials, production, storage, distribution, marketing, administration. Determine a sale price for the consumer and production quantity needed.

Question 13 (c)***Sample answer/Answers could include:***

- Prototype testing is essential to ensure QC in mass production
- Testing to satisfy Australian Food Standards Code – microbial, chemical, etc
- Shelf-life tests – to ensure product quality for maximum use-by-date. This could be done on time but takes time.
- Package strength testing to ensure strength, safety and durability for consumer safety.
- Focus groups
- Sensory testing

Section II, Part B

Question 14 (a)

Sample answer/Answers could include:

- Fast food outlets e.g. McDonalds, Kentucky Fried Chicken – allocate huge budgets to advertise using all media facets
- TV advertisements in children’s viewing slots – targeting all ages, showing meal solutions and displaying happy families, meal deals
- Use of Ronald McDonald (children’s character)
- Use of familiar/ similar buildings for outlets (the M sign)
- Advertisement in magazines, newspaper
- Associations with children’s charities (Ronald McDonald House)
- Giveaways and promotions
- Use of toys and gimmicks
- Sports sponsorship – KFC Australian Cricket team

Question 14 (b)

Sample answer/Answers could include:

Students will need to make relationships between attitudes towards milk and this advertisement.

- This advertisement depicts a woman’s body shape with an hourglass figure (shows she has curves). Milk is needed for good health/ strong bones/ calcium content. If you drink milk you could achieve this shape.
- The tape measure emphasises a small waist and could mean weight loss if you drink milk. Knowledge that even full cream milk only contains 4% fat. Fat reduced milk is lower in fat / 99% fat free.
- Gender issues concerning the higher calcium needs of women. Women can get this calcium from milk and still maintain shape.
- The ease of drinking milk. It’s food to go and fills you up. (level of glass / straw)
- Students may view this image as fat and the relationship may fit that attitude.
- Positive endorsement by DAA relates to health and weight loss.
- Trusted logo of Dairy Australia.
- Slim body image of a female with “hour-glass” figure is reinforced by tape-measure image to trigger slimness thoughts.
- A body supposedly filled with milk as inviting and refreshing
- The term REAL PEOPLE love milk – may entice consumers to think they will look good if they drink milk.
- Milk may be a diet-related food – but there is no mention of fat-reduced / slim varieties.
- Very much a female target for milk consumption – maybe to restore their lost interest in milk or to suggest it’s a “sexy” drink.
- Only suggests milk is good for your figure not your bones and teeth.
- Targets a mature female form and may be unrealistic for many females.

Question 15 (a)

Sample answer/Answers could include:

FSANZ

Question 15 (b)

Sample answer/Answers could include:

Legislation exists about nutrition claims on nutrition panels to reduce confusion for consumers.

98% fat free means it must only contain 2% fat. Low GI means foods have been tested for Glycemic Index (typically high in fibre and low in sucrose). Low GI foods are digested slowly, slowing down the rise in blood sugar levels.

Question 15 (c)

Sample answer/Answers could include:

There's no legal definition for the use of these words; Pure, Fresh, Natural and Real (referred to as quality descriptors in a FZANZ user guide to manufacturers but not legally binding).

Reasons the words are influential is that they create positive expectations about the foods they describe often without any real bias. These may persuade people to purchase a product.

The words mean different things to different people. Lots of interpretations, lots of confusion among consumers about what they 'really mean'.

Examples: The Fresh Food People (Woolworths), Naturally Grown (used on cans/packages), Real Fruit (used on jam labels), Pure Foods (used on a variety of labels).

Section III

Question 16 (a)

Sample answer/Answers could include:

The main reasons for preserving foods are for:

- Safety– promote safety for consumers
- Acceptability– keep foods in a form acceptable to the consumer and therefore prevent waste
- Nutritive value– retain the nutritional value of the food
- Availability– make perishable foods available all year round
- Economic viability– achieve economic viability for the company

Question 16 (b)

Sample answer/Answers could include:

Causes of food deterioration and spoilage:

- Physical damage– bruising
- Enzymic activity– over-ripened fruit
- Microbial activity– mould, bacteria and yeast. Under ideal conditions microbes will develop toxins and make consumer ill. Conditions include warmth (danger zone 4–60°C), moisture, oxygen, ph \rightarrow 4. Eg fresh meat will carry bacteria (salmonella, E coli).
- Infestation– insects, cockroaches and rats
- Environmental factors– oxygen, light and water

Question 16 (c)

Sample answer/Answers could include:

Selected food– Milk:

- Pasteurisation– heat treatment
- Dehydration– restriction of moisture
- Canning– exclusion of air, heat treatment
- UHT– heat treatment, sterilisation

Question 17 (a)

Outcomes assessed: H1.3

Sample answer/Answers could include:

- Line extensions– involve relatively minor changes to extend the range of a company’s existing products by incorporating features such as new flavours, colours, and different serving sizes. For example, Arnott’s and Tim Tam range of flavours
- New to the world products– are those, which are completely new and different to pre-existing products and have not been on the market before. For example, Sippah Straw, Pringles
- Me too– direct copies or with minor modifications of existing products available on the market and manufactured by other companies. For example, Pepsi Cola and Coca Cola, Kettle Chips and Red Rock Deli

Question 17 (b)

Sample answer/Answers could include:

Selects a type of food product development– line extension.

Internal factors include:

- Financial position of the company
- Production facilities e.g. Equipment must be modified/upgraded for new products. Level of production established. E.g.
 - Small Volume – one off/small equipment
 - Batch Production– special purpose machines, easily adapted for shapes etc
 - Mass Production – automatic and/or computerised – with highly skilled personnel
- Personnel expertise within the company
- Company image

Question 17 (c)

Sample answer/Answers could include:

- Market concerns e.g. health and environment
- Consumer demands e.g. convenience and cost
- Technological developments e.g. packaging materials and processing equipment
- Company profitability e.g. increased market share and entering new and non-traditional markets
- Specialised applications e.g. military purposes
- Product lifestyle
- Consumers are constantly seeking new and different foods.

Section IV

Question 18

Sample answer/Answers could include:

Aboriginal and Torres Strait Islanders–

Nutritional considerations associated with this group include:

- Heart disease
- Cancer
- Digestive disorder
- Obesity
- Alcoholism
- Lactose intolerance
- Anaemia
- Diabetes
- Low life expectancies compared to non-indigenous males/ females

Dietary needs:

- Less alcohol
- Less fat
- More complex carbohydrates
- Better food supply especially in outer areas

Question 19

Outcomes assessed: H2.1

Sample answer/Answers could include:

<p>Diabetes</p> <ul style="list-style-type: none"> • Body produces not enough or no insulin • Obesity • High fat low fibre • Hereditary link 	<p>Cardiovascular disease</p> <ul style="list-style-type: none"> • Plaques resulting from excess production and consumption of cholesterol and saturated fat • Animal foods are a source of saturated fat • LDL vs HDL • History in the family • Overweight
<p>Devise a dietary plan</p> <ul style="list-style-type: none"> • Reduce saturated fat • Small meals throughout the day • Lose weight • Limit alcohol • Low GI foods 	<p>Devise a dietary plan</p> <ul style="list-style-type: none"> • Reduce saturated fat and cholesterol • Antioxidants • Phyto oestrogens • Folate

Question 20

Sample answer/Answers could include:

Market place trend: ecologically sustainable production methods

Example– organic farming

Environmental:

- Seeks to improve soil fertility
- Increases biodiversity
- Reduces need for pesticides

Social:

- Organic food often considered to be more nutritious (inconsistent evidence)
- Organic food may be safer for human consumption (no pesticides residue)
- Some consumers prefer the taste of organic produce
- Safer OH&S issues as workers are not subject to dangerous chemicals

Economic:

- Organic produce is more expensive to buy and therefore organic farms can be quite profitable, however yields are sometimes lower

Ethical:

- Organic methods reduce concern for destruction of the environment, preserving it for future generations
- Organic farming methods e.g. free range, may be considered a less cruel way of farming (animal welfare issues)

Question 21

Sample answer/Answers could include:

Cradle to grave measures the real cost of food production (economic, social, environmental cost)

- Cultivation
- Harvesting
- Packaging
- Transport
- Advertising
- Sales
- Consumption
- Waste disposal