



# Units 3 and 4 Food and Technology

## Practice Exam Solutions

Stop!

Don't look at these solutions until you have attempted the exam.

Any questions?

Check the Engage website for updated solutions, then email [practiceexams@ee.org.au](mailto:practiceexams@ee.org.au).

## **Section A – Multiple-choice questions**

### **Question 1**

The correct answer is C.

### **Question 2**

The correct answer is D.

### **Question 3**

The correct answer is A.

### **Question 4**

The correct answer is C.

### **Question 5**

The correct answer is B.

### **Question 6**

The correct answer is A.

### **Question 7**

The correct answer is C.

### **Question 8**

The correct answer is A.

### **Question 9**

The correct answer is D.

### **Question 10**

The correct answer is B.

### **Question 11**

The correct answer is C.

### **Question 12**

The correct answer is B.

### **Question 13**

The correct answer is D.

### **Question 14**

The correct answer is A.

### **Question 15**

The correct answer is A.

## Section B – Short-answer questions

### Question 1a

Food Standards Australia New Zealand

### Question 1b

Answer should list two of the following:

- Protect public health and safety
- Ensure the public are given sufficient information
- Prevent food manufacturers from misleading the public and the consumer
- Develop and maintain food laws

### Question 1c

The Food Standards Code is a set of rules (legislation) that is designed to ensure that only safe food is sold in Australia and New Zealand. The answer must include two of the four major areas that the code addresses:

- What food should be made of (ingredients), for example, how much fruit must be in jam
- How foods should be labelled
- Additives that can be put into foods
- Rules for food hygiene

### Question 1d

Federal: They develop and maintain the Food Safety Standards to ensure that all food premises in Australia and New Zealand produce food that is safe for consumption.

State: They develop guidelines to help food premises establish a food safety program. This food safety program requires each business to have a food safety supervisor. The state government establishes the qualifications needed for these supervisors. Finally, they implement a regular procedure whereby the food safety systems of food premises are regularly audited.

Local: Local councils employ environmental health officers who are responsible for the inspection of the premises on an annual basis. The local council also registers new businesses; however, before they can be registered the premises must have an approved food safety program.

**Question 2**

Environmental issue	What is it?	How do we prevent it?
Salinity	<p>Occurs when the water table rises, taking salt to the surface. Most crops cannot grow in a salty environment. Salinity can be caused by:</p> <ul style="list-style-type: none"> <li>• Land clearing: Roots of trees are no longer able to hold water table in place</li> <li>• Overwatering: Often through poorly maintained irrigation systems</li> </ul>	<ul style="list-style-type: none"> <li>• Keep well maintained irrigation system to avoid overwatering</li> <li>• Avoid clearing land of too many trees.</li> </ul>
Land degradation	<p>It is the deterioration in the quality of the land and its topsoil. It can be caused by erosion and through poor maintenance of its soil.</p>	<ul style="list-style-type: none"> <li>• Crop rotation: allows soil a chance to renew so that nutrients are not drained from the soil</li> <li>• Well maintained drip irrigation: avoids salinity</li> <li>• Reducing the use of chemicals and artificial fertilisers: Reduces risk of soil becoming over acidic</li> <li>• Convert to organic farming: Reduces risk of chemicals ruining the soil</li> <li>• Reduce land clearing or plant more trees around the farm: the plant roots hold the soil in place which prevents soil erosion</li> </ul>
Overuse of fertilisers and chemicals.	<p>When farmers overuse fertilisers, the soil can become acidic and unsuitable for crops to grow. The use of chemicals such as herbicides and pesticides can be dangerous to the environment when overused. The excess chemicals can go into the water supply causing green algae in rivers. It can also contaminate food products.</p>	<ul style="list-style-type: none"> <li>• Regulate use of fertilisers often and test soil to ensure it is not becoming acidic</li> <li>• Convert to organic farming</li> <li>• Farmers need to monitor their plants regularly to ensure they are not over spraying their crops</li> </ul>

**Question 3a**

Answer must include two of the following:

- Cereals
- Fruits
- Vegetables
- Nuts
- Legumes

**Question 3b i**

Answers are not provided for this question as a range of responses are acceptable. Ask your teacher or tutor to look over your work and suggest improvements.

**Question 3b ii**

Answers are not provided for this question as a range of responses are acceptable. Ask your teacher or tutor to look over your work and suggest improvements.

**Question 3b iii**

Food undergoes secondary processing for many reasons including:

- Preservation: so foods can be available for extended period of time
- Creating variety for consumers
- Making foods more convenient for consumers by reducing preparation time
- Make foods more appealing
- Reduce waste eg slightly bruised apples can be made into apple juice

**Question 3c i**

Answer must be one of the following:

- Boiling
- Poaching
- Steaming
- Braising
- Casseroling
- Stewing

**Question 3c ii**

Food spoilage is the reduction of food quality identified by the deterioration in the physical, sensory and / or chemical properties. It can be caused by yeasts, moulds and enzymes. Consumption of food which is spoiled will not generally result in illness. Food poisoning, on the other hand, is an illness caused by consuming food contaminated by bacteria, chemicals or biological contamination.

**Question 4a**

One driving force could be social pressure. Under this driving force there are many reasons why this new product may have been developed. Some reasons include:

- Increase in multiculturalism: People are more aware and interested in foods from different cultures. This is because of the increasingly multicultural society we live in. Also we have much contact with different countries through travel and the internet that people are more aware of other foods. They are more willing to try foods from overseas.
- More people living alone: This includes elderly and the divorced. This means that single serve meals otherwise known as home replacement meals are popular.
- People are less skilled in cooking: People prefer foods that are easy to serve.
- People have less time: More people are working and lead busy lifestyles and so quick to serve meals may have been developed to meet these people's needs.

Another driving force is technological changes:

- Packaging improvements allow this single serve meal to be neatly packaged in a plastic material that can be microwaved.

Another driving force could be consumer demands:

- People have less time and are less skilled: This means there is an increase in demand for foods that are quick and easy to prepare
- People are more concerned about their health: The increase on knowledge of the link between food and health means that there is an increase in the demand for healthy foods. Products with added health benefits are in demand therefore this product with added fibre will be attractive to certain people.

**Question 4b i**

Answers are not provided for this question as a range of responses are acceptable. Ask your teacher or tutor to look over your work and suggest improvements.

**Question 4b ii**

Answers are not provided for this question as a range of responses are acceptable. Ask your teacher or tutor to look over your work and suggest improvements.

**Question 4c i**

Microwave emits waves that penetrate the food and cause the food molecules to vibrate rapidly thus creating heat. Question 4c ii

Answer must include 4 of the following disadvantages:

- As metal surfaces reflect microwaves, metal bowls and aluminium foil are unsuitable.
- Microwaving can cause the occurrence of "heat spots" in food (heat food more in one area than another)
- Doesn't brown food (maillard reaction cannot occur in the microwave)
- Emits radiation
- Can overcook foods easily
- Cakes cooked in the microwave become heavy and puddling-like
- Some plastic containers cannot be used in microwaves as they are not designed to be exposed to high temperatures and may melt if used in a microwave.
- Only microwave safe containers can be used, otherwise normal containers can release plasticisers and contaminate food upon heat exposure.

**Question 4d i**

Functional foods are foods or ingredients that provide a health benefit beyond basic nutrition.

**Question 4d ii**

This new product contains health benefits beyond the traditional health benefits of rice because of the added fibre. Some health benefits of consuming this product include:

- Promotes healthy digestive system
- Reduces the chance of bowel related diseases eg diverticulitis and bowel cancer

**Question 4d iii**

Answers are not provided for this question as a range of responses are acceptable. Ask your teacher or tutor to look over your work and suggest improvements.

**Question 5a**

Answer must include two of the following:

- Communication: To let consumers know about the product and help manufacturers market and promote their products while also ensuring the consumer receives key information and is not misled
- Containment: Food can be moved about safely from field to factory to shops and finally to homes.
- Convenience: Allows people to buy food which makes their life easier. For example: resealable containers, single serve packaging, microwavable packaging, etc.
- Preservation: Keeps food fresh and safe. Extends shelf life by preventing spoilage.
- Protection: Food is protected from climate change, tampering and insects etc. For example: tamper evident packaging

**Question 5b i**

Aseptic Packaging is a process where the food product and the packaging are sterilised separately and then are brought together in a sterile environment. It is designed to extend the shelf life of food without the use of preservatives, food additives and refrigeration. The packaging is made from paper, plastic and foil.

**Question 5b ii**

The answer must include two of any of the advantages for the consumer and two advantages for the manufacturer:

Advantages for consumer	Advantages for manufacturer
<ul style="list-style-type: none"> <li>• No preservatives</li> <li>• Product has a long shelf life</li> <li>• Suitable for a range of foods</li> <li>• No refrigeration required until after opening</li> <li>• Natural flavour and colour are maintained</li> <li>• Nutrient value is maintained</li> </ul>	<ul style="list-style-type: none"> <li>• Packing is strong but light and is therefore easy for manufacturers to distribute</li> <li>• There are large, flat surfaces on the packaging that can be printed on</li> <li>• Different size and shaped packaging can be made</li> </ul>

**Question 5c i**

Answer must include two of the following:

- Must not have any internal air pockets as they would crush under the high pressures used during this process
- Food must contain water to ensure that all the bacteria that cause food spoilage and food-borne diseases are destroyed
- Foods must have high acid content
- Foods must be packaged in a flexible packaging

**Question 5c ii**

Answer must include two of the following:

- The sensory properties of the product are maintained as the food is not being exposed to high temperatures. Creates appealing taste for consumers.
- Nutrients in the food are minimally disrupted which allows the foods to be higher in nutrition than those which are preserved through chemicals or exposure to heat.
- The process destroys many bacteria that can cause illness.
- Yeasts and moulds are destroyed giving the food an extended shelf life. This is convenient for consumers as it gives them a longer time frame in which it is safe to consume the product.
- Chemical preservatives are not needed. This is beneficial to consumers as the food are 'clean-green'.

**Question 6a i**

A food safety system that identifies potential food hazards and their critical control points at all stages in food production. Its purpose is to ensure that food is prepared, manufactured and handled safely.

**Question 6a ii**

Answers are not provided for this question as a range of responses are acceptable. Ask your teacher or tutor to look over your work and suggest improvements.

**Question 6b i**

Cross-contamination of food involves the transfer of harmful bacteria from uncooked or raw food to food that has already been cooked or prepared.

**Question 6b ii**

Answers are not provided for this question as a range of responses are acceptable. Ask your teacher or tutor to look over your work and suggest improvements.

**Question 6b iii**

Denaturation: This is where there is a permanent change to the protein strands in food, resulting in different properties of that food. In the case of this chicken ravioli the chicken is being exposed to heat. The heat causes denaturation and the meat become harder. The more heat is applied, the more the protein strands will be denatured and the harder the chicken will become.

**Question 7a**

Microencapsulation is a process whereby a substance is surrounded by a thin biodegradable shield to protect it so that the flavour of the product is not affected. There are many examples of foods that use this technology some examples include omega-3 bread, krill oil tablets, jelly beans, chewing gum and orange juice enhanced with iron.



**Question 7b**

Answer must include two of the following:

- Masks the flavour of the core material so consumers can benefit from the ingredients without tasting it.
- Enhance sensory properties of food products Eg jelly beans
- Enables the release of core material in a controlled manner Eg chewing gum
- Enables the core product to be evenly distributed throughout the product
- Improves the properties of the core material during the manufacturing process Eg encapsulating the raising agent in bread to ensure it does not release prematurely.

**Question 8**

Answers are not provided for this question as a range of responses are acceptable. Ask your teacher or tutor to look over your work and suggest improvements.