



2008 Health & Food Technology

Advanced Higher

Finalised Marking Instructions

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Instructions to markers.

General Instructions

Each question is marked out of 25. Markers should use the full range of marks available as indicated in the mark descriptors for an A, B and C response at the top of each question.

Candidates should be rewarded according to the quality of thought revealed in their answers. They should not be rewarded solely, or even mainly, according to the quantity of knowledge conveyed. In progression from Higher a more advanced grasp of the skills of analysis, synthesis and interpretation is required. Credit will be awarded according to the degree of success with which the candidate:

- Gives an answer which is relevant to the question and is explicitly related to the terms of the question
- Is able to make the various distinctions required by the question
- Responds to all the elements in the question in a coherent manner
- Applies knowledge and explains, analyses, discusses rather than simply stating facts
- Develops the skills of analysis and evaluation through critical appraisal.

Section A

(a) Outline the main issues of the report.

Mark allocation: 5 marks

A – 4-5 marks

The candidate is able to clearly outline the majority of the main issues of the report.

B – 3 marks

The candidate is able to outline most of the issues of the report.

C – 2 marks

The candidate is able to list some of the main issues of the report.

Answers should make reference to the following points:

1. Junk foods have existed for many years, it is only in recent years that these occasional treats have turned into daily meals, more frequently eaten.
2. No one seems to know where the term 'junk food' originated, but it's generally agreed that it includes any food with little or no nutrients and large amounts of fat and calories.
3. Junk foods are often heavily processed food, but it can also include meals at home.
4. The Food Standards Agency is currently working on a definition for junk food, using a method that rates the nutrient, fat, sugar and salt content.
5. Some people think junk foods are also foods which contain additives, preservatives, may contain pesticides or ingredients that are genetically modified.
6. Lack of definition means that it is difficult to encourage manufacturers to label junk foods adequately or to stop their promotion.
7. Junk foods are so tempting because of all the extras which are added eg flavour enhancers, artificial colours etc.
8. In 2000 it was found that approximately $\frac{3}{4}$ of primary children drank on average 30 glasses of fizzy drinks a week and that nearly all school aged children have more than the adult recommended levels of saturated fat.
9. Only one in nine children in 2005 were eating the recommended five portions of fruit and vegetables a day and many were still eating none, despite healthy eating promotions.
10. One reason habits are difficult to change is the addictive nature of junk foods.
11. Deficiency of zinc in school children reduces the ability to taste and smell food and so encourages cravings for sweet, salty or spicy foods.
12. A variety of powerful schemes are used to encourage us to eat more junk foods.
13. A diet high in junk foods impacts on health, both physical and mental health.
14. Attitudes to junk food need to change – to look at quantity consumed.
15. Encouraging children to eat a variety of foods should improve their diet.
16. Mental health and the link to sugar consumption.
17. Government is taking on board the issue of obesity by using a variety of measures.

(b) Discuss the implications for children's health of a diet high in 'junk food'.

Mark allocation: 10 marks

A – 8-10 marks

The candidate is able to develop a full and coherent discussion of the implications for children's health of a diet high in 'junk food'. The discussion shows good analysis and the identification of the main points with full explanations.

B – 6-7 marks

The candidate is able to develop a discussion of the implications for children's health of a diet high in 'junk food'. Most of the main points will be identified with some explanation.

C – 4-5 marks

The candidate will be able to identify some of the main points with limited explanation.

The candidate should make reference to the following points:

1. Increased risk to health in adult life – eating habits are established in childhood, research has indicated a strong link between diet in childhood and diet related illness in later life.
2. High salt levels in junk foods may increase blood pressure in later life which could lead to stroke/heart attack.
3. High fat levels may contribute to overweight, an overweight child is very likely to become an overweight adult.
4. If fat contributes to obesity, child less likely to participate in sport which exacerbates the problem.
5. Many junk foods are of low nutritional value, children who have smaller appetites require nutrient dense diets to ensure they receive all the nutrients, a variety of deficiency diseases could occur eg anaemia/osteoporosis.
6. High levels of sugar in these foods may contribute to tooth decay.
7. High intake of sugars at a young age may contribute to the development of type 2 diabetes.
8. High saturated/trans fat levels of many junk foods may mean high cholesterol levels which increase risk of CHD.
9. High intake of saturated fats may contribute to cancer eg breast/bowel cancers.
10. High saturated/trans fat levels may result in cholesterol build-up in arteries which may lead to strokes in later life.
11. High saturated fat intake may lead to obesity resulting in an increased risk of heart attack.
12. Diets high in junk foods tend to be low in fruit and vegetables which may mean – low intake of NSP increases risk of bowel disorders such as constipation, bowel cancer, diverticulitis etc.
13. Diets high in junk foods tend to be low in fruit and vegetables which may mean low intake of anti-oxidant vitamins increases risk of CHD and some cancers in later life.
14. Diet high in fruit and veg decreases desire to snack on fatty/sugary foods, junk food diet does the opposite so increase risk of obesity.
15. Junk foods likely to contain additives some of which may cause hyperactivity in children.
16. May lead to mental health issues/addiction leading to high dependency on these foods resulting in obesity/CHD in later life.
17. Some additives may cause allergic reactions in children.
18. Reference to any specific type of junk food and the effect on health.

(c) Critically discuss the role of the media in influencing children's food choices.

Mark allocation: 10 marks

A – 8-10 marks

The candidate is able to critically discuss the statement giving full analysis.

B – 6-7 marks

The candidate is able to critically discuss the statement giving some analysis.

C – 4-5 marks

The candidate is able to critically discuss the statement giving limited analysis.

Note: Candidates should link responses to the “role” of the media not focus solely on the methods employed.

1. The media is very powerful when it comes to influencing children's food choices, a variety of techniques are used.
2. Advertisers target young children by using well known characters to sell food.
3. Characters used to sell products eg Spiderman Spaghetti promoted to children.
4. Promotional characters/films/free gifts used to entice children into fast food outlets etc.
5. More restrictions on food adverts during popular children's programmes.
6. The media use events such as football matches to advertise their products eg posters round the pitch.
7. Advertisers sponsor programmes they know children watch eg Cadbury's and Coronation Street.
8. Product placement within children's TV programmes/films/soaps aimed at children.
9. Adverts put pressure on children to pester parents into buying foods.
10. Adults/Children's magazines/comics are used to target particular children.
11. Jingles are used to attract their attention.
12. Celebrities are used to create images round foods.
13. Promotion of free schools equipment through purchase of foods can encourage children to buy/adults to buy for children.
14. Websites may promote foods to children.
15. Multi global branding allows all channels from all over the world to bombard children with the same messages.
16. Advertising could be used in a positive way to encourage children to improve their food choices.
17. The media eg articles, documentaries could be used in a positive way.

Section B

1. “The dietary targets set for 2005 are overwhelmingly not being achieved”.

Review of the Scottish Diet Action Plan (2006)

- (a) Discuss the possible reasons for this.

Mark allocation: 10 marks

A – 8-10 marks

The candidate is able to develop a full and coherent discussion on the possible reasons for this statement. The discussion shows good analysis and the identification of the majority of the main points with full explanation.

B – 6-7 marks

The candidate is able to develop a discussion on the possible reasons for this statement. Most of the main points will be identified with explanation.

C – 4-5 marks

The candidate is able to identify some of the main points with limited explanation.

Answers should make reference to the following points:

Access to Shops

1. Availability of fresh food eg fruit/veg/fish/healthier products in local shops at a suitable price is often a problem – the more expensive local corner shop is often still the main supplier of basic food items for lower income groups and those living in areas of high deprivation.
2. Fresh food eg fruit and vegetables in local shops can often be poorly displayed and of poor quality so people are less likely to buy it.
3. Poor storage facilities in such shops means fresh fruit and vegetables deteriorate more quickly meaning both loss on nutrients and less availability of ‘quality’ foods. Also as they are expensive, money will not be spent on them as they go off quickly.
4. Local shops tend to sell a higher proportion of lower cost longer lasting convenience foods which can be higher in fat, sugar and salt.
5. Often poorer selection in local shops, especially of lower fat/sugar varieties.
6. Large supermarkets may have a wide range of high fat/sugar foods which are tempting and encourage consumption.

Poor Housing and Poverty

1. Poor housing and limited finances often equal poor cooking facilities so convenience foods used more often.
2. Less incentive to prepare fresh foods when facilities are poor so more reliance on prepared convenience foods.
3. Healthy options which are more expensive do not sell well in deprived communities.
4. Unable to produce homemade foods if food preparation and cooking facilities poor.
5. Varying priorities – TV’s, videos may all take precedence over a healthy diet.

Resources

1. Fear of wasting food if healthier options/fresh foods are tried but not liked.
2. Healthier options can often be more expensive especially for low income groups.
3. Limited family income may mean cheaper, less healthy options are chosen.
4. Fatty foods are filling, cheap – important if budget is limited.
5. Fresh foods have a limited shelf life therefore are more prone to waste.
6. Increased range of fast foods/takeaways/eating out may be available to those who have financial resources.

Education/Knowledge

1. Wording of targets confusing making it difficult for general public to know what they are supposed to be eating and how much.
2. Lack of appropriate education/practical skills means people do not know what or how to change, nor do they have the confidence to try new foods/cooking methods.
3. Mixed and ever changing messages from the media confuse people.
4. Poorer educational standards may in turn mean less access/understanding of potential problems which could occur due to poor diet.
5. May have good knowledge but not the financial resources to change.
6. Sense of 'it'll not happen to me' with regard to illness/disease.
7. Difficulty in understanding labelling – hidden fats etc.
8. Promotion of many foods as healthy – only 10% fat – leads to confusion and lack of understanding/consumption of less healthy foods.
9. Many people distance themselves from healthy eating messages as they think they eat healthily already.

Media/advertising

1. Promotion of convenience foods appeal to those with limited finances as waste is minimal.
2. Promotion of foods eg buy one get one free, which are high in fat, sugar and salt far exceeds that of 'healthier' options so consumers persuaded to follow a poor diet.
3. Many adverts for foods high in fat, sugar and salt are directed at children so poor eating habits encouraged from an early age and therefore difficult to change in later life.
4. Conflicting messages from media make it difficult to know what to eat and what not to eat eg too much alcohol is bad for you but red wine is good for you?

Children

1. May have access to good nutritional meals/food at school but poorer nutritional meals/foods at home.
2. Poor eating habits formed in childhood follow us on to adult life and so the cycle continues down the generations.
3. Difficult to encourage children to eat foods such as fish, fruit and vegetables – parents do not always persevere and as a result food dislikes can be formed at an early age.
4. Sweet consumption is often encouraged and given as a reward by parents, grandparents etc.
5. Watching what their parents eat can set patterns of food consumption which are detrimental to health and difficult to change in later life.

Time/lifestyle

1. Increased use of convenience foods high in fat, sugar, salt due to lack of time for food preparation.
2. Many people work longer hours so don't have time/inclination to prepare own 'healthy' foods.
3. Shift from eating 3 'good' meals a day to 'grazing' making it easy to consume snack foods which may be of poor nutritional quality.
4. Few families sit down and eat meals together so several convenience foods may be used at different times to suit the needs of individual family members.
5. Changing role of women is a contributory factor in the reduction of practical food preparation skills which were previously passed from one generation to another – knock on effect – increased use of convenience foods.
6. Increased disposable income where 2 parents working may increase consumption of take away foods which tend to be high in fat and salt.

Food industry/Manufacturers

1. Basic training in nutrition for those working in the food and hospitality industry could improve.
2. Slow progress at adapting products to make them “healthier” and those products available are often more expensive and the change in taste may make them less acceptable to consumers.
3. The food supply chain has not been fully engaged with the need to change eg the undermining of health messages by powerful marketing and advertising of food and drinks.
4. Labelling is still confusing to many consumers so many find it difficult to make an informed choice – unaware of “hidden” fats and sugars.
5. The target for fruit and vegetables has not been embedded in any of the policies or into any of the Scottish executives policies on agriculture and farming (apart from the Berry project) so consumer demand for fruit and vegetables was not stimulated.
6. Large chains of supermarkets control much of what is eaten by British families by promoting/ stocking particular types of foods, often large quantities of convenience foods which can be higher in fat, sugar, salt.

Cultural conventions

1. Poor diet in Scotland is now a historical fact with many high fat foods – difficult to change eating habits/resistance to change.
2. Pressure on people in rural areas to change to a diet high in convenience foods – and so increasing fat, salt and sugar – and to move away from growing their own produce such as vegetables.

Consumer attitudes

1. Motivation to change food eating habits may be lacking.
2. Peer pressure.
3. Consumer’s dislike of government intervention.
4. Some consumers value other priorities before healthy eating.

Foods in school

1. Although tuck shops/vending machines in schools offer healthy products, these may be ignored by pupils in favour of less healthy products from local shops.
2. Pupils may not take advantage of free fruit available in primary schools but there is no evidence as yet that it directly impacts on total fruit consumption of primary school children.
3. Although school meals offer healthy meals, these may be ignored by pupils in favour of less healthy products from local shops/cafes.

Taste

1. Fat, sugar and salt are important in the flavour of foods – these foods are desirable so contribute to health problems.
2. Likes/dislikes.

(b) Critically discuss the role of schools in the achievement of the current dietary targets.

Mark allocation: 15 marks

A – 12-15 marks

The candidate is able to critically comment on the role of schools in the achievement of the current dietary targets, giving full analysis of the factors.

B – 9-11 marks

The candidate is able to critically comment on the role of schools in the achievement of the current dietary targets, giving some analysis of the factors.

C – 7-8 marks

The candidate is able to critically comment on the role of schools in the achievement of the current dietary targets, giving limited analysis of the factors.

Answers should make reference to the following points:

1. Essential that messages taught in the classroom are backed by foods on offer in school otherwise messages become confusing.
2. Eating well needs to be part of our lives – if children eat differently at school this could affect food choices out of school and the food choices of entire families.
3. Breakfast clubs must back up messages taught in the classroom and reflect the targets.
4. After school clubs must provide children with nutritious, filling snacks to reinforce targets.
5. The introduction of schemes to facilitate healthy choices which reflect the targets.
6. Caterers must back agreed healthy eating messages and not overtly promote unhealthy choices.
7. Senior managers/dining hall supervisors/dinner ladies/men should be aware of healthy eating messages and encourage healthy choices which reflect the targets.
8. Incentive schemes could be used, eg pricing, competitions, to encourage healthy choices which reflect the targets.
9. Links between biology and nutrition could be used to promote the value of foods and link to targets.
10. Links between PE and targets could be linked via sports nutrition.
11. Home Economics departments have a vital role to play in providing pupils with the skills to prepare healthy, nutritious foods.
12. Home Economics dept can ensure pupils have knowledge of the targets and their implications for health.
13. Home Economics departments can link with school meals supervisors to promote good choices at lunchtime by using the curriculum, competitions, food tasting etc.
14. Involvement of parents vital to the improvement, they must be on board, educated and well informed.
15. School board/PTA could help organise educational activities/leaflets for parents regarding targets – provided they have the necessary knowledge themselves.
16. Joint projects between health centres and schools could help reinforce targets.
17. The use of vending machines can be in conflict with targets if they are not stocked with appropriate choices.
18. The use of sweets as prizes at school activities is in conflict with targets.
19. Use of School Nutrition Action Groups to promote targets.
20. Have a clear whole school policy regarding nutrition at school which links with targets.
21. Development and education of all school staff to promote the targets/how to achieve/can be positive/negative effect.
22. Health weeks/health promoting events/plasma screens can be used to highlight the targets.
23. Hungry for Success has ensured healthy eating became part of the curriculum and was taught in the classroom.

24. Free fruit for primary 1/2 pupils has encouraged fruit consumption and allowed children to experience fruits which they might not have tried otherwise.
25. Opportunities to work with catering staff to promote healthy eating through school dinners.
26. Reward schemes can be used to promote the healthier options and encourage uptake.
27. Links can be made with parents to ensure that the healthy eating message is taken into the home especially with regard to packed lunches/snacks sent to school.
28. Health Promoting schools should ensure whole school policy on healthy eating for staff as well as pupils and encourage the consumption of healthier options.
29. Healthier options must be readily available at breaks as well as lunch and be competitively priced or cheaper to encourage uptake.
30. Nursery/primary play a role in early education related to diet.

2. Discuss how the properties of eggs can be used in the manufacture of food products.

Mark allocation: 25 marks

A – 18-25 marks

The candidate is able to develop a full and coherent discussion of the properties of eggs in the manufacture of food products. The discussion shows good analysis and the identification of the majority of the main points with full explanation.

B – 15-17 marks

The candidate is able to develop a discussion of the properties of eggs in the manufacture of food products. Most of the main points will be identified with explanation.

C – 12-14 marks

The candidate is able to identify some of the main points with limited explanation.

Answers should make reference to the following points;

Candidate should be given credit for identifying the property
Responses should be linked to manufacture.

General/nutritional properties

1. Eggs increase the nutritional value of dishes.
2. The protein in egg is of high biological value and consequently considered an important protein food – valuable when manufacturers consider the nutritive value of their products.
3. Eggs contain valuable amounts of iron, vitamin A and calcium – valuable when manufacturers consider the nutritive value of their products.
4. Eggs contain small amounts of riboflavin, vitamin D and thiamine – valuable when manufacturers consider the nutritive value of their products.
5. Cooking eggs reduces the vitamin B content.
6. Due to fat content in the yolk, more than two per week may raise blood cholesterol levels in some people with a specific type of familiar hyper cholesterol anaemia – may have implications to manufacturer when considering the ‘health’ of a product.
7. Eggs are an inexpensive ingredient with many properties so are an invaluable component of many foods.
8. Flavour – eggs provide a rich flavour to otherwise insipid products.
9. Colour – eggs add a rich colour to otherwise pale products.
10. Iron sulphide is formed round egg yolks during cooking and causes black discolouration when eggs have been hard boiled. This happens most with stale eggs, but it can be reduced by placing them in cold water immediately after boiling – important eg in the production of Scotch Eggs.
11. The shell of an egg is porous so care must be taken prior to manufacture to ensure odours are not allowed to enter the shell.
12. Bacteria may also enter the egg through the shell, so again safe storage is required to reduce the risk of salmonella.
13. Thickening agent – egg proteins coagulate thus enabling mixtures to thicken, eg egg custard.
14. Binding agent – coagulation of protein enables mixtures to hold together on cooking eg rissoles.
15. Coating – egg sets and holds breadcrumbs in place eg Scotch Eggs.
16. Coating – eggs can be used in conjunction with breadcrumbs to coat food to protect it whilst cooking, eg fish and Scotch Eggs.
17. Emulsifying agent – egg yolk contains lecithin which is an emulsifying agent used in the production of mayonnaise.

Coagulation

1. When heat is applied the eggs coagulate to produce a rigid structure.
2. When eggs are heated, the protein in the white and the yolk coagulates.
3. Egg white proteins coagulate first at about 60 degrees C. The white becomes opaque and forms a gel.
4. Yolk proteins coagulate at 66 degrees C and the yolk thickens.
5. Coagulation of protein is responsible for the thickening effect eggs have in products eg egg custard, quiche, lemon curd.
6. Coagulation of egg custard produces a gel.
7. The firmness of the final product of custard will depend on the proportion of ingredients eg eggs to milk.
8. The firmness will also depend on the addition of other ingredients eg addition of sugar raises the temperature for coagulation and produces a softer texture.
9. The rate of coagulation is increased by the addition of salt and acid – important manufacturers know this as end product may be affected.
10. Over coagulation of eggs during cooking can have a detrimental effect on food products as the egg can become rubbery and may separate leaving a watery liquid to seep out.

Aeration

1. Foaming – when egg whites are beaten, air is incorporated and the protein partially coagulates as a foam. Meringues are prepared in this way.
2. In whisked sponges the entrapped air is the primary leavening agent and air bubbles expand from the heat. Steam from water enters the air bubble and expands them further.
3. Whisked sponges have reduced fat content/no added fat.
4. When whisking egg whites foaming may be promoted by the addition of an acidic substance such as vinegar. This lowers the pH value – could be used by manufacturers to make the foam more stable eg in pavlova.
5. Over beating of egg white results in denaturation of the protein – foam collapses resulting in loss of volume.
6. Aeration – eggs are used in creamed mixtures to produce lightness in products.

3. Despite increasing sales, much debate surrounds the production and consumption of organic foods. Discuss this statement.

Mark allocation: 25 marks

A – 18-25 marks

The candidate is able to develop a full and coherent discussion of the debate surrounding the production and consumption of organic foods. The discussion shows good analysis and the identification of the majority of the main points with full explanation.

B – 15-17 marks

The candidate is able to develop a discussion of the debate surrounding the production and consumption of organic foods. Most of the main points will be covered with explanation.

C – 12-14 marks

The candidate is able to identify some of the main points with limited explanation.

Answers should make reference to the following points:

General

1. Organic is a term governed by law.
2. All organic food production and processing is governed by a strict set of rules/Soil Association.
3. Organic farmers have to prove that no agro-chemicals are used or have been used during a 2 year conversion period.
4. To be called organic the manufactured product must have no less than 95% of its agricultural raw materials produced or grown organically.
5. Certification is provided by independent inspectors approved by the UK Register of Organic Food Standards (UKROFS).
6. The organic market was worth £1.6 billion in 2005 compared to £8 million in 2000.

Reasons for increase in sales of organic products

1. Considered to be a safe sustainable farming system.
2. It is considered that it produces crops and livestock without damage to the environment.
3. It avoids the use of artificial chemicals – fertilisers/pesticides.
4. The use of genetically modified organisms is prohibited.
5. Animals are reared without routine use of drugs, antibiotics and wormers.
6. Helps farms to remain biologically balanced.
7. A wide variety of beneficial insects and wildlife can act as natural predators for crop pests.
8. Increased concern for animal welfare – organic is better for them.
9. Concerns over pollution, non organic agriculture uses artificial fertilisers/pesticides which can add to water pollution.
10. Food is thought to be safer – no incidence of BSE in organic foods in the last 20 years, less likely to harbour e-coli.
11. It is considered to taste better by some consumers.
12. It is considered to be better for health – less allergies/side effects.
13. Several studies have shown higher levels of protein, vitamin C, calcium, iron and potassium in organic vegetables.
14. Vastly increased ranges in supermarkets means there is a much wider range of goods to choose from.
15. Increased demands are bringing cost of organic foods down.
16. Increased popularity of delivered organic ‘box’ schemes.
17. People concerned with ‘food miles’ may choose to buy from farmers markets which sell organic foods.
18. There are a number of subsidies and grants available to farmers who wish to change to produce organic foods making supply of foods easier as numbers participating increase.

19. It has become more fashionable to choose organic food as it is now seen as a mainstream choice as opposed to something unusual to purchase.
20. Some councils use local organic produce to support local communities.
21. Increased promotion of organic products.
22. 'Green' image may appeal to some consumers.

Additives

1. Organic foods tend to have fewer food additives in them which appeals to the health conscious consumer – the following are banned.
2. Phosphoric acid, which is a highly acidic ingredient used in cola drinks. It can leave the bones brittle and porous and lead to osteoporosis.
3. Aspartame, the most widely used artificial sweetener. Reported reactions to aspartame include headaches, nausea, diarrhoea, convulsions and seizures.
4. Monosodium glutamate, which is thought to be responsible for dizziness, headaches and asthma attacks.
5. Sulphur dioxide which can often cause problems in people who have asthma.
6. Hydrogenated fat, which is linked to heart disease, is banned under organic standards.

Negative aspects of organic foods

1. Converting to organic agriculture can take up to 5 years.
2. May have an impact of sustainability of farming particular crops.
3. Although grants available, there is still a financial constraint on farmers which may hinder them from converting.
4. Pesticides can drift over from conventional farms.
5. Higher price for organic food makes it too expensive for those on a lower income.
6. Smaller scale farming means lower yields and fewer economies of scale.
7. Appearance of foods, especially vegetables may not be as good.
8. Fresh vegetable products may not have such a long shelf life.
9. No guarantee that the product is completely residue free.
10. Some scientists believe there are no nutritional benefits.
11. An equal number of studies have shown no difference in nutritional content between organic and non-organic foods, than have shown a difference.
12. Natural pesticides produced by plants can be more harmful than synthetic ones.
13. Concern over the occurrence of E-coli bacteria in the manure used as fertilizer and the safety of organic crops.
14. High levels of toxins in organic foods could be hazardous to health eg green potatoes.
15. Foods may be contaminated by copper and sulphur containing fungicides.
16. Recent studies have shown that organic chicken is less nutritious, contains more fat and tastes worse than free range or battery farmed meat (plus cost considerations).
17. Organic chicken contains lower levels of the anti oxidant Vitamin E which preserves the flavour of the meat.
18. Organic chicken also had lower level of Omega 3 fatty acids and some had higher cholesterol levels.
19. There is now concern that the increasing industrialisation of organic farming to meet demands has led to a dilution of its "green" credentials and quality.
20. May have an adverse effect on the sustainability of farming particular crops.

4. Discuss how the consumer may be protected by food safety legislation.

Mark allocation: 25 marks

A – 18-25 marks

The candidate is able to develop a full and coherent discussion of how the consumer may be protected by food safety legislation. The discussion shows good analysis and the identification of the majority of the main points with full explanation.

B – 15-17 marks

The candidate is able to develop a discussion of how the consumer may be protected by food safety legislation. Most of the main points will be covered with explanation.

C – 12-14 marks

The candidate is able to identify some of the main points with limited explanation.

Answers should make reference to the following points;

Candidates should be given credit for correct identification of legislation;

Food Safety Act 1990

1. A wide ranging act which has strengthened and updated previous legislation regarding food safety.
2. Aims to ensure all food produced for sale is safe to eat, reaches quality expectations and is not misleadingly presented.
3. Makes it an offence to sell food which is injurious, unsafe or sub standard.
4. Provides legal powers and penalties to enforce the act. These duties are carried out by Environmental Health Departments in relation to food hygiene issues and by trading standards in relation to food labelling etc.
5. Food which fails to comply with the standards or which may cause food poisoning can be seized and be detained by an authorised officer.
6. Anyone found guilty of an offence under the act may be fined up to £20,000 and/or imprisoned for up to 6 months.
7. To ensure standards are improved, where necessary an 'improvement notice' may be imposed to ensure the standards are met.
8. Failure to comply with an improvement notice is an offence.
9. If there is an imminent danger to health the officer may serve an emergency prohibition notice which requires the immediate closure of a premises.
10. Enables us to fit in with the requirements of the EU and to meet their food safety requirements
11. Allows us to keep pace with technological change and so ensure food developments do not put safety of the consumer at risk.
12. In particular it covers sources from which the food is derived and articles which come into contact with the food so the consumer is protected throughout the food chain.
13. It covers farmers directly so ensures safe primary production.
14. Enforcement officers have the right to inspect food sources and to take action when an offence has been committed.

Food Hygiene (Scotland) Regulations 2006

These regulations are designed to ensure that food hygiene regulations in Scotland meet the requirements of being a member of the European Community.

- Anyone who processes or sells food is covered by these regulations and are legally bound to make sure they carry out their operations safely and hygienically.
- Anyone who owns, manages or works in a food business, apart from those working in primary food production such as harvesting, slaughtering or milking, is affected by these regulations.
- The regulations apply to **all** premises, from restaurants and supermarkets to vans, vending machines and village halls. Whether food is sold publicly or privately, in a hotel or in a marquee, for profit or fund-raising these regulations must be observed.

The main points of the regulations are to ensure:

Owners of a food business must carry out a hazard analysis and risk assessment of their business. The one that is most widely used by food businesses is known as Hazard Analysis Critical Control Point (HACCP).

1. They ensure that all sellers/processors of food must identify all steps in their activities which are critical to food safety – emphasis on controlling risk thus reducing risk to the consumer.
2. Also ensure that adequate safety controls are in place, maintained and reviewed.
3. This is undertaken by implementing the Hazard Analysis Critical Control Point (HACCP) system.

General food hygiene

The aim is to set out basic hygiene principles to control food safety risks. All food must be fit for human consumption and protected to minimise risk of infection.

The regulations deal with the following areas:

1. **Premises** – their design and construction to permit good hygiene practices, maintenance, controls against pests, ventilation, adequate drainage, hand washing facilities, removal and storage of waste, lighting, toilet facilities.
2. **Equipment** – design for ease of cleaning, maintenance, material made from, well installed. It ensures food equipment is kept clean and in good repair and condition.
3. **Transport** – used to carry food – must be kept clean and well maintained.
4. **Hygiene of food handlers** – good personal hygiene, routine hand washing, protective clothing, cover cuts appropriately, no jewellery or nail polish, no smoking.
5. **Fitness for work** – specific medical conditions which will make food handlers likely to contaminate food, legally, must be excluded from any food handling eg diarrhoea, pus containing sores, vomiting, any form of food poisoning. Food handlers if known or suspected of carrying a disease or infection must not be permitted to work.
6. **Preventing food contamination** – cooked and raw foods kept apart during preparation and storage, place food safely, open food to be 45cm from the ground, cover open food while exposed, store food at correct temperatures, ie refrigerators at below 5°C.
7. **Training and supervising food handlers** – instruction and/or training in food hygiene matters to the level appropriate for their job. Staff must be adequately trained and supervised in matters relating to food safety.

Temperature Control

1. States that the maximum temperature of 8°C is the specific requirement for all foods that could support the development of harmful pathogenic micro-organisms or the formation of toxins, this helps protect the consumer from food poisoning.
2. Regulations cover all food stuffs including raw materials and ingredients.
3. They apply to all stages from transport, preparation, processing, storage, manufacturing, catering and retailing.
4. Even if the food is kept below 8°C, if it known to support the growth of pathogenic bacteria at say 5°C the law is breached.
5. Food which is to be reheated before serving must reach a temperature of not less than 82°C.
6. Cooked food which is to be kept hot for more than 2 hours must be kept above 63°C to prevent the growth of pathogens or the formation of toxins.
7. A food business responsible for cooling food that will be kept at chill temperatures must cool the food as quickly as possible after cooking. Cooling is a critical step to food safety especially for 'high risk' foods.
8. Environmental Health Officers enforce the regulation for example by:
 - checking the temperature of cold rooms, refrigerators and chilled cabinets
 - recording temperatures between packs of food
 - probing for centre temperature.

5. Discuss the contribution of anti-oxidants to health and wellbeing.

Mark allocation: 25 marks

A – 18-25 marks

The candidate is able to develop a full and coherent discussion of the contribution of antioxidants to health and wellbeing. The discussion shows good analysis and the identification of the majority of the main points with full explanation.

B – 15-17 marks

The candidate is able to develop a discussion of the contribution of antioxidants to health and wellbeing. Most of the main points will be identified with explanation.

C – 12-14 marks

The candidate is able to identify some of the main points with limited explanation.

Answers should make reference to the following points:

Credit should be given for identification of anti oxidants

General role

1. Antioxidants are vital to health as they are substances which act in the body's first line of defence against unwanted damage.
2. They are produced either by the body or found in the food we eat.
3. Studies consistently show that people who have high intakes of fruit and vegetables (and antioxidant vitamins) have lower levels of cancer and CHD.
4. Antioxidants help protect us against free radicals, these are formed internally as a by-product of metabolism whenever oxygen is involved and externally they are left behind by smog, cigarette smoke, pollution, pesticides etc, antioxidants can help prevent the damage they do.
5. If there is an imbalance between antioxidants and free radicals, high levels of free radicals can attack proteins, fatty acids, DNA, which can result in chronic illness eg CHD, cancer, degeneration of the eyes so it is vital to have a good supply of anti oxidants in the diet.
6. Antioxidants may also counteract free radicals reducing senility and early ageing.
7. It is thought that free radicals cause LDL cholesterol to become oxidised causing it to be deposited on the walls of blood vessels starting the process of atherosclerosis.
8. Scotland's diet traditionally lacks fruit and vegetables and has a high level of CHD – important to ensure a habit of eating fruit and vegetables from a young age to ensure a supply of antioxidants.
9. Some individuals eg professional athletes, smokers or those living in heavily polluted areas may benefit from antioxidant supplements.

Vitamins

Vitamin A/Carotenoids

1. Carotenoids are antioxidants and are shown to reduce the risk of cancer.
2. If the diet is high in carotenoids there is a lower risk of macular degeneration of the eye.
3. Beta Carotene – best known, inactivates free radicals.
4. Beta Carotene – improves the immune capacity of the body.
5. Beta carotene – inhibits the early stages of tumour development.
6. Alpha carotene – high intakes linked with decreased risk of lung cancer.
7. Beta cryptoxanthan associated with decreased risk of cancer of the cervix.
8. Lutein – protects the macula of the eye from deterioration – important to older adults.
9. Zeaxanthin – protects the macula of the eye from deterioration – important to older adults.
10. Lycopene – high intake – lower risk of prostate cancer in men.
11. Lycopene is fat soluble and is carried in the blood stream attached to the dangerous LDL cholesterol where it seems to work in conjunction with Vitamin E preventing LDL from oxidation – helps prevent CHD.

Vitamin C

1. Vitamin C in its antioxidant role neutralises oxygen free radicals and has been shown to reduce cancers of the digestive tract (oesophagus, stomach and pancreas).
2. Aids the absorption of iron especially vegetable sources reducing risk of anaemia.
3. Required for the formation of connective tissue and helps in the healing of cuts and wounds.

Vitamin E

1. Protects the lipids of cell membranes from damage.
2. Protects LDL cholesterol from oxidation and so helps prevent CHD and certain forms of cancer.

Minerals

Selenium

1. Works in combination with Vitamins C and E. It is a component of an antioxidant enzyme – glutathione peroxidase – which reduces peroxides before they can attack intracellular membranes.
2. Also enhances immune response.

Copper

1. Component of several enzymes and assists in quenching free radicals.
2. Involved in forming blood cells.

Zinc

1. Part of the enzyme superoxide dismutase which prevents free radicals from forming peroxides that could harm tissues.

Enzymes

1. Super dismutase prevents free radicals from forming peroxides that can harm tissues.
2. Glutathione peroxide containing selenium reduces peroxides and so prevents them from attacking cells.
3. Lipoic acid assists in preventing strokes, CHD and cancer.

Flavonoids

1. Flavonoid rich food (particularly those containing catechins) are cardio protective and are powerful antioxidants and scavenge free radicals.

Question	Content	Elaboration	Skills		Totals
			Knowledge	Evaluation	
Section A (a) (b) (c)	Psychology of food	<ul style="list-style-type: none"> • Influence on consumer • Consumers attitude to food issues • Role/influence of media • Consumer behaviour • Fast foods – impact on food habits • Fast foods – in a social context 	5	10	25
	Biochemistry, preservation and processing		10		
Section B 1 (a) (b)	Food Politics	<ul style="list-style-type: none"> • Food, nutrition and health issues/policies in Scotland and the UK • The impact of nutritional/health, cultural, social, economic and environmental factors on food availability, selection and consumption patterns 	10	15	25
2	Food Commodities Food Science	<ul style="list-style-type: none"> • Composition and properties of the following goods in raw and cooked state; Eggs <ul style="list-style-type: none"> - Uses in food preparation - Changes during cooking • Proteins 	25		25
3	Biochemistry, preservation and processing	<ul style="list-style-type: none"> • Organic food 	25		25
4	Food chain	<ul style="list-style-type: none"> • Food hygiene/safety issues in the food chain with reference to Food Safety Legislation 	25		25
5	Nutrients and their effect on the health and development of individuals	<ul style="list-style-type: none"> • Anti-oxidants – role in health 	25		25

[END OF MARKING INSTRUCTIONS]