



ADVANCED
General Certificate of Education
2018

Nutrition and Food Science

Assessment Unit A2 1

assessing

Option A: Food Security and Sustainability

or

Option B: Food Safety and Quality

[ANF11]

THURSDAY 24 MAY, MORNING

MARK SCHEME

General Marking Instructions

Introduction

The main purpose of the mark scheme is to ensure that examinations are marked accurately, consistently and fairly. The mark scheme provides examiners with an indication of the nature and range of candidates' responses likely to be worthy of credit. It also sets out the criteria which they should apply in allocating marks to candidates' responses.

Assessment objectives

Below are the assessment objectives for Nutrition and Food Science.

Candidates should be able to demonstrate:

- AO1** knowledge and understanding of the specified content
- AO2** the ability to apply knowledge, understanding and skills in a variety of situations and to analyse problems, issues and situations using appropriate skills
- AO3** the ability to gather, organise and select information, evaluate acquired knowledge and understanding, and present and justify an argument

Quality of candidates' responses

In marking the examination papers, examiners should be looking for a quality of response reflecting the level of maturity that may reasonably be expected of a 17- or 18-year-old, the age at which the majority of candidates sit their GCE examinations.

Flexibility in marking

Mark schemes are not intended to be totally prescriptive. No mark scheme can cover all the responses which candidates may produce. In the event of unanticipated answers, examiners are expected to use their professional judgement to assess the validity of answers. If an answer is particularly problematic, then examiners should seek the guidance of the Supervising Examiner.

Positive marking

Examiners are encouraged to be positive in their marking, giving appropriate credit for what candidates know, understand and can do rather than penalising candidates for errors or omissions. Examiners should make use of the whole of the available mark range for any particular question and be prepared to award full marks for a response which is as good as might reasonably be expected of a 17- or 18-year-old GCE candidate.

Awarding zero marks

Marks should only be awarded for valid responses and no marks should be awarded for an answer which is completely incorrect or inappropriate.

Types of mark schemes

Mark schemes for tasks or questions which require candidates to respond in extended written form are marked on the basis of levels of response which take account of the quality of written communication.

Other questions which require only short answers are marked on a point for point basis with marks awarded for each valid piece of information provided.

Levels of response

In deciding which level of response to award, examiners should look for the 'best fit' bearing in mind that weakness in one area may be compensated for by strength in another. In deciding which mark within a particular level to award to any response, examiners are expected to use their professional judgement.

The following guidance is provided to assist examiners.

- **Threshold performance:** Response which just merits inclusion in the level and should be awarded a mark at or near the bottom of the range.
- **Intermediate performance:** Response which clearly merits inclusion in the level and should be awarded a mark at or near the middle of the range.
- **High performance:** Response which fully satisfies the level description and should be awarded a mark at or near the top of the range.

Quality of written communication

Quality of written communication is taken into account in assessing candidates' responses to all tasks and questions that require them to respond in extended written form. These tasks and questions are marked on the basis of levels of response. The description for each level of response includes reference to the quality of written communication.

For conciseness, quality of written communication is distinguished within levels of response as follows:

- Level 1: Quality of written communication is basic.
- Level 2: Quality of written communication is adequate.
- Level 3: Quality of written communication is competent.
- Level 4: Quality of written communication is highly competent.

In interpreting these level descriptions, examiners should refer to the more detailed guidance provided below:

Level 1 (Basic): The candidate makes only a limited attempt to select and use an appropriate form and style of writing. The organisation of material may lack clarity and coherence. There is little use of specialist vocabulary. Presentation, spelling, punctuation and grammar may be such that the intended meaning is not clear.

Level 2 (Adequate): The candidate makes a reasonable attempt to select and use an appropriate form and style of writing. Relevant material is organised with some clarity and coherence. There is some use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are sufficiently competent to make meaning evident.

Level 3 (Competent): The candidate makes a good attempt to select and use an appropriate form and style of writing. Relevant material is organised with a good degree of clarity and coherence. There is widespread use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are of a sufficiently high standard to make meaning clear.

Level 4 (Highly competent): The candidate successfully selects and uses the most appropriate form and style of writing. Relevant material is succinct, well organised and displays a high degree of clarity and coherence. There is extensive and accurate use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are of the highest standard and ensure that meaning is absolutely clear.

Option A: Food Security and Sustainability**AVAILABLE MARKS****Section A**

1 (a) Describe how the Love Food Hate Waste campaign encourages consumers to reduce food waste. (AO1, AO2, AO3)

Mark Band ([0]–[2])

Overall impression: basic

- inadequate knowledge and understanding of the Love Food Hate Waste campaign
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to describe how this campaign encourages consumers to reduce food waste
- quality of written communication is basic

Mark Band ([3]–[5])

Overall impression: adequate

- adequate knowledge and understanding of the Love Food Hate Waste campaign
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to describe how this campaign encourages consumers to reduce food waste
- quality of written communication is adequate

Mark Band ([6]–[8])

Overall impression: competent

- competent knowledge and understanding of the Love Food Hate Waste campaign
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to describe how this campaign encourages consumers to reduce food waste
- quality of written communication is competent

Mark Band ([9]–[10])

Overall impression: highly competent

- highly competent knowledge and understanding of the Love Food Hate Waste campaign
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to describe how this campaign encourages consumers to reduce food waste
- quality of written communication is highly competent

Examples of suitable points to be described by the candidate:

- provides information; campaign provides information for consumers through their website and newsletter on the global, environmental and economic impact of food waste and associated packaging
- free app; provide a free app to enable the consumer to track food planning, shopping and using leftovers

- provides practical advice; consumer advice is provided on the website and available to download to help consumers use food effectively such as meal planners, shopping lists, recipes to avoid waste and use leftovers, food storage advice
- get involved; consumers are encouraged to get involved in the campaign by using the 'Save More' packs to help them raise awareness of the campaign with their family, friends or local community or using the online interactive guide to run a Love Food Hate Waste day or week
- social media; consumers are encouraged to share their experiences and tips on Twitter, Facebook or Instagram

All other valid points will be given credit. [10]

(b) Suggest possible reasons for the problem of food waste. (AO1, AO2, AO3)

Mark Band ([0]–[3])

Overall impression: basic

- inadequate knowledge and understanding of the problem of food waste
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to suggest possible reasons for this problem
- quality of written communication is basic

Mark Band ([4]–[7])

Overall impression: adequate

- adequate knowledge and understanding of the problem of food waste
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to suggest possible reasons for this problem
- quality of written communication is adequate

Mark Band ([8]–[11])

Overall impression: competent

- competent knowledge and understanding of the problem of food waste
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to suggest possible reasons for this problem
- quality of written communication is competent

Mark Band ([12]–[15])

Overall impression: highly competent

- highly competent knowledge and understanding of the problem of food waste
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to suggest possible reasons for this problem
- quality of written communication is highly competent

AVAILABLE
MARKS

Examples of suitable points to be described by the candidate:**Primary Producers**

- poor storage facilities and lack of infrastructure; these cause post-harvest food losses in developing countries. Fresh produce such as fruit, vegetables, meat and fish can be spoilt in hot climates due to lack of infrastructure for transportation, storage, cooling and markets
- when production exceeds demand; farmers sometimes make production plans on the safe side to ensure delivery of agreed quantities. This can result in the production of larger quantities than needed

AVAILABLE MARKS**Food Manufacturers**

- preparation; peeling, washing, slicing and trimming often leads to inevitable waste
- processing; stock can be damaged, spillages can occur, machinery and equipment can cause delays

Retailers

- quality standards; some produce is rejected by supermarkets due to rigorous quality standards concerning weight, size, appearance and shape of crops
- forecasting demand; it is a challenge for retailers to predict sales; weather, consumer trends, calendar events and the seasonality of food add to this challenge

Consumers

- impulsive purchasing; supermarket offers and promotions encourage consumers into impulsive purchasing decisions which can lead to wastage
- storage; incorrect storage of food leads to deterioration and a failure to consume food within the expiry date leads to food waste
- abundance and consumer attitude; consumers can afford to waste food in developed countries
- limited food planning; limited planning can lead to buying more food than needed

All other valid points will be given credit.

[15]

25

Section A

25

Section B

**AVAILABLE
MARKS**

2 Discuss the social and environmental disadvantages associated with large supermarkets. (AO1, AO2, AO3)

Mark Band ([0]–[5])

Overall impression: basic

- inadequate knowledge and understanding of the social and environmental disadvantages associated with large supermarkets
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to discuss these disadvantages
- quality of written communication is basic

Mark Band ([6]–[10])

Overall impression: adequate

- adequate knowledge and understanding of the social and environmental disadvantages associated with large supermarkets
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to discuss these disadvantages
- quality of written communication is adequate

Mark Band ([11]–[15])

Overall impression: competent

- competent knowledge and understanding of the social and environmental disadvantages associated with large supermarkets.
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to discuss these disadvantages
- quality of written communication is competent

Mark Band ([16]–[20])

Overall impression: highly competent

- highly competent knowledge and understanding of the social and environmental disadvantages associated with large supermarkets
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to discuss these disadvantages
- quality of written communication is highly competent

Examples of suitable points to be discussed by the candidate:

Social disadvantages

- damages local communities; large supermarkets can affect local shops' trade which can result in closure of specialist shops and services such as post office
- access to food; the loss of local, independent shops can cause problems in terms of access to food for elderly, those on lower incomes who do not have the use of a car
- reduces choice; by dominating food sales, big supermarkets take away choice from consumers to buy food from local shops, markets, farm shops or specialist shops

- negative impact on the local economy; independent shops are part of the local community and often support their local community in the form of spending on local produce, staff wages and money spent in other local shops and businesses. The money consumers spend in large supermarkets does not go back into the local community
- impact on quality of life for other businesses; small retailers often have to work long hours and open seven days a week to compete with the extended opening hours offered by large supermarkets
- impact on health; supermarket pricing policies may increase consumption of unhealthy food, leading to an increase in diet related disorders

AVAILABLE
MARKS

Environmental disadvantages

- increased carbon dioxide emissions; these come from increased car use by consumers to access large out of town supermarkets, from heat, lighting and air conditioning systems and transport of food by road and air freight
- waste production; supermarkets produce food and associated packaging waste which can contribute to pollution climate change. Transportation, handling and stacking of food on shelves increases the amount of packaging used in comparison to food produced locally
- impact on agriculture; supermarkets are run by national retail chains who have control over the food chain which allows them to determine the price they pay to farmers. Supermarkets tell farmers to grow two or three varieties of fruit and vegetables in large quantities to supply all their stores, this reduces biodiversity in the countryside and choice for the consumer
- green belt; supermarkets have been able to convince planners to build on green belts
- land use; large shed-like structured buildings take up land which could be put to other purposes such as green open space

All other valid points will be given credit.

[20]

20

3 Examine the benefits of Fairtrade for producers and outline some of the barriers that prevent consumers from choosing Fairtrade when shopping for food. (AO1, AO2, AO3)

AVAILABLE MARKS

Mark Band ([0]–[5])

Overall impression: basic

- inadequate knowledge and understanding of the benefits of Fairtrade for producers
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to examine these benefits
- demonstrates a limited ability to outline some of the barriers that prevent consumers from choosing Fairtrade when shopping for food
- quality of written communication is basic

Mark Band ([6]–[10])

Overall impression: adequate

- adequate knowledge and understanding of the benefits of Fairtrade for producers
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to examine these benefits
- demonstrates a limited ability to outline some of the barriers that prevent consumers from choosing Fairtrade when shopping for food
- quality of written communication is adequate

Mark Band ([11]–[15])

Overall impression: competent

- competent knowledge and understanding of the benefits of Fairtrade for producers
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to examine these benefits
- demonstrates a competent ability to outline some of the barriers that prevent consumers from choosing Fairtrade when shopping for food
- quality of written communication is competent

Mark Band ([16]–[20])

Overall impression: highly competent

- highly competent knowledge and understanding of the benefits of Fairtrade for producers
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to examine these benefits
- demonstrates a highly competent ability to outline some of the barriers that prevent consumers from choosing Fairtrade when shopping for food
- quality of written communication is highly competent

Examples of suitable points to be examined by the candidate:

Benefits of Fairtrade for producers

- stable income; for most Fairtrade goods there is a minimum price which is set to cover the cost of sustainable production for that product in that region. If the market price for that product is higher than the Fairtrade minimum price

then farmers and workers should receive the market price. This process is regularly audited and checked by FLO-Cert and provides protection for workers from fluctuations in the market prices of their products

- Fairtrade Premium; this is an additional sum of money over and above the Fairtrade price which provides a communal fund for workers and farmers to use to improve their social, economic and environmental conditions such as education, healthcare or building vital infrastructure for their community
- fair working conditions; labourers are guaranteed safe and healthy working conditions and opportunities for advancement. In particular, women's leadership and participation in cooperatives is encouraged. Human rights and child labour laws are enforced and upheld
- partnership; Fairtrade global system is 50% owned by producers representing farmer and worker organisations. This gives producers a say in decision-making on overall strategy, use of resources and setting prices, premiums and standards
- empowerment of farmers and workers; small farmer groups must have a democratic structure and transparent administration to be certified. Workers must be allowed to have representatives on a committee that decides on the uses of the Fairtrade Premium. Both groups are supported by Fairtrade International to develop their capacity in this area
- loans; Fairtrade provides access to, and oversees, loans to help producers invest

AVAILABLE MARKS

Barriers that prevent consumers from choosing Fairtrade

- attitudes, beliefs and knowledge; it can be challenging for consumers to see how food purchased in their local town or supermarket has any impact on the working life and environment of others
- climate change; Fairtrade products are imported, consumers may question the environmental cost of importing products by sea or air
- cost; Fairtrade products are perceived by consumers to be more expensive than other products on the supermarket shelf

All other valid points will be given credit.

[20]

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4 Evaluate environmental or green claims as a source of information for consumers who wish to make sustainable food choices. (AO1, AO2, AO3)

AVAILABLE MARKS

Mark Band ([0]–[5])

Overall impression: basic

- inadequate knowledge and understanding of environmental or green claims on food
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to evaluate these claims as a source of information for consumers who wish to make sustainable food choices
- quality of written communication is basic

Mark Band ([6]–[10])

Overall impression: adequate

- adequate knowledge and understanding of environmental or green claims on food
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to evaluate these claims as a source of information for consumers who wish to make sustainable food choices
- quality of written communication is adequate

Mark Band ([11]–[15])

Overall impression: competent

- competent knowledge and understanding of environmental or green claims on food
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to evaluate these claims as a source of information for consumers who wish to make sustainable food choices
- quality of written communication is competent

Mark Band ([16]–[20])

Overall impression: highly competent

- highly competent knowledge and understanding of environmental or green claims on food
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to evaluate these claims as a source of information for consumers who wish to make sustainable food choices
- quality of written communication is highly competent

Examples of suitable points to be evaluated by the candidate

- provide information; environmental or ‘green’ claims can help consumers to make informed buying choices by giving information about the environmental impact and qualities of food products. They also help raise awareness of the issues and enhance consumer understanding
- assurance for consumers; businesses can use the claims to enhance their credentials and demonstrate that they are acting responsibly. This can act as an assurance to consumers and influence their food choice
- marketing ploy; consumers could be misled by the reliability of the information as environmental claims have become a major selling point for food products

- green terminology; this is a barrier to making good food choices for the consumer as it is often confusing, for example, misleading or false claims such as 'sustainably sourced' or 'responsibly farmed' are not helpful
- reliability; green claims are often too vague and unconvincing and not verifiable. So many claims are made, and not believed by consumers
- regulation; some green claims are 'self-declared' by individual companies and can be used without external consent. These complicate consumer choice or do not help consumers make sustainable choices
- consumer engagement; there are too many claims to accurately make sustainable food choices
- priorities when shopping; consumers are generally driven by price and other priorities such as taste and brand loyalty

All other valid points will be given credit.

AVAILABLE
MARKS

[20]

20

5 "Every day too many men and women across the globe struggle to feed their children a nutritional meal. In a world where we produce enough food to feed everyone, 815 million people – one in nine – still go to bed on an empty stomach each night. Even more – one in three – suffer some form of malnutrition." (AO1, AO2, AO3)

AVAILABLE MARKS

© World Food Programme

Consider possible reasons for the food poverty highlighted in the statement above.

Mark Band ([0]–[5])

Overall impression: basic

- inadequate knowledge and understanding of global food poverty
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to consider possible reasons for the food poverty highlighted in the statement
- quality of written communication is basic

Mark Band ([6]–[10])

Overall impression: adequate

- adequate knowledge and understanding of global food poverty
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to consider possible reasons for the food poverty highlighted in the statement
- quality of written communication is adequate

Mark Band ([11]–[15])

Overall impression: competent

- competent knowledge and understanding of global food poverty
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to consider possible reasons for the food poverty highlighted in the statement
- quality of written communication is competent

Mark Band ([16]–[20])

Overall impression: highly competent

- highly competent knowledge and understanding of global food poverty
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to consider possible reasons for the food poverty highlighted in the statement
- quality of written communication is highly competent

Examples of suitable points to be considered by the candidate:

- poverty trap; people living in poverty cannot afford nutritious foods for themselves and their families. This makes them weaker and less able to earn the money that would help them escape poverty and hunger. In developing countries farmers cannot afford seeds to plant the crops for their families, others have no land or water or education
- lack of investment in agriculture; developing countries lack key infrastructure such as roads, warehouses and irrigation. The results are high transport costs, lack of storage facilities and unreliable water supplies

- climate and weather; drought is one of the most common causes of food shortages in the world. In many countries climate change is exacerbating already adverse natural conditions
- war and displacement; conflict consistently disrupts farming and food production. Fighting also causes millions of people to flee their homes leading to hunger emergencies. Fields are often mined and water wells contaminated forcing farmers to abandon their land. Soldiers will starve opponents into submissions by seizing or destroying food and livestock
- unstable markets; unstable food markets make it difficult for the poorest people to access nutritious food consistently. Price spikes may temporarily put food out of reach which can have lasting consequences for small children. When prices rise, consumers often shift to cheaper, less-nutritious foods, heightening the risks of micronutrient deficiencies and other forms of malnutrition
- food wastage; one third of all food produced is never consumed
- cost of healthy food; UK food prices have increased and food expenditure as a proportion of total household expenditure has continued to rise. Static incomes, high unemployment and changes to benefits are causing many families to struggle to provide a healthy diet for themselves and their families
- prevalence of disease; in developing countries diseases such as HIV/Aids can reduce family size making farming and food production more difficult

All other valid points will be given credit.

[20]

20

Section B

60

Option A

85

Total

85

**AVAILABLE
MARKS**

Option B: Food Safety and Quality**AVAILABLE MARKS****Section A**

1 (a) Describe the work of the European Food Safety Authority (EFSA) in relation to food safety from field to fork. (AO1, AO2)

Mark Band ([0]–[2])

Overall impression: basic

- inadequate knowledge and understanding of the EFSA
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to describe the work of the EFSA in relation to food safety from field to fork
- quality of written communication is basic

Mark Band ([3]–[5])

Overall impression: adequate

- adequate knowledge and understanding of the EFSA
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to describe the work of the EFSA in relation to food safety from field to fork
- quality of written communication is adequate

Mark Band ([6]–[8])

Overall impression: competent

- competent knowledge and understanding of the EFSA
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to describe the work of the EFSA in relation to food safety from field to fork
- quality of written communication is competent

Mark Band ([9]–[10])

Overall impression: highly competent

- highly competent knowledge and understanding of the EFSA
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to describe the work of the EFSA in relation to food safety from field to fork
- quality of written communication is highly competent

Examples of suitable points to be described by the candidate:

- plant protection; EFSA plays an important role in ensuring the safe use of pesticides, EFSA's scientists also evaluate the risks posed by pests and weeds to plant health
- animal health and welfare; many food-borne diseases that affect humans, such as campylobacteriosis and salmonellosis, originate from animals. EFSA works on issues such as housing, feeding or transportation of livestock to prevent and reduce the risk of disease
- impact on the environment; EFSA is required to consider the impact of the food chain on the environment. For example they assess the

potential risks to the eco-system of genetically-modified crops as well as pesticides, food additives and invasive plant species

- EFSA assess and communicate on all risks associated with the food chain
- EFSA conduct scientific assessment and support risk management and policy makers e.g. legislation on food or feed safety, pesticides and food additives
- transportation and storage: EFSA assess the risks of contamination from contact with animals, food handlers, machinery, vehicles and packaging materials used in transportation and storage; they provide scientific advice on possible measures to limit these risks
- food production and innovation: food and feed related products require scientific risk assessment by EFSA before they can be authorised for use on the EU market. Regulated food ingredients include additives, flavourings, enzymes and nutritional substances, food contact materials, pesticides and GMOs as well as the substantiation of nutrition and health claims
- food consumption: EFSA supports data collection on food consumption trends and habits, providing funding for these activities. This informs their work both in the area of food safety; and advice on nutrition, diet and health

All other valid points will be given credit.

[10]

(b) Explain why food safety is a public health priority. (AO1, AO2, AO3)

Mark Band ([0]–[3])

Overall impression: basic

- inadequate knowledge and understanding of food safety as a public health priority
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to explain why food safety is a public health priority
- quality of written communication is basic

Mark Band ([4]–[7])

Overall impression: adequate

- adequate knowledge and understanding of food safety as a public health priority
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to explain why food safety is a public health priority
- quality of written communication is adequate

Mark Band ([8]–[11])

Overall impression: competent

- competent knowledge and understanding of food safety as a public health priority
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to explain why food safety is a public health priority
- quality of written communication is competent

AVAILABLE
MARKS

Mark Band ([12]–[15])

Overall impression: highly competent

- highly competent knowledge and understanding of food safety as a public health priority
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to explain why food safety is a public health priority
- quality of written communication is highly competent

AVAILABLE
MARKS

Examples of suitable points to be explained by the candidate:

- unsafe food: unsafe food creates a vicious cycle of illness and malnutrition, threatening the health of the most vulnerable. Where food supplies are insecure, people tend to shift to less healthy diets and consume more “unsafe foods” – in which chemical, microbiological and other hazards pose health risks
- disease prevention: millions of people fall ill every year and many die as a result of eating unsafe food contaminated with pathogenic bacteria. Diarrhoeal diseases are the most common illnesses resulting from the consumption of contaminated food
- long-term health problems: food contaminated with heavy metals or with naturally occurring toxins can also cause long-term health problems including cancer and neurological disorder
- climate change: is also predicted to have an impact on food safety, where temperature changes modify food safety risks associated with food production, storage and distribution
- economy and society: food contamination has far reaching effects beyond direct public health consequences. It undermines food exports, tourism, livelihoods of food handlers and economic growth, both in developed and developing countries
- antimicrobial resistance: some harmful bacteria are becoming resistant to drug treatments and this is a growing global health concern. Overuse and misuse of antimicrobials in agriculture and animal husbandry, in addition to human clinical uses, is one of the factors leading to the emergence and spread of antimicrobial resistance. Antimicrobial-resistant bacteria in animals may be transmitted to humans via food
- Globalisation – unsafe food poses global health threats as the food chain becomes longer and complex. Known and new food borne diseases, hazards and risks spread more easily facilitating long distance transmission of pathogens.

All other valid points will be given credit.

[15]

25

Section A

25

Section B**AVAILABLE MARKS**

2 Describe the quality assurance systems food manufacturers should use to ensure safe food production. (AO1, AO2, AO3)

Mark Band ([0]–[5])

Overall impression: basic

- inadequate knowledge and understanding of quality assurance systems
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to describe quality assurance systems food manufacturers should use to ensure safe food production
- quality of written communication is basic

Mark Band ([6]–[10])

Overall impression: adequate

- adequate knowledge and understanding of quality assurance systems
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to describe the quality assurance systems food manufacturers should use to ensure safe food production
- quality of written communication is adequate

Mark Band ([11]–[15])

Overall impression: competent

- competent knowledge and understanding of quality assurance systems
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to describe the quality assurance systems food manufacturers should use to ensure safe food production
- quality of written communication is competent

Mark Band ([16]–[20])

Overall impression: highly competent

- highly competent knowledge and understanding of quality assurance systems
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to describe the quality assurance systems food manufacturers should use to ensure safe food production
- quality of written communication is highly competent

Examples of suitable points to be described by the candidate:**Good manufacturing practices**

- objective: Good Manufacturing Practice (GMP) is the area of quality assurance which ensures that food products are consistently produced and controlled to high standards appropriate for their use and as required by the product specification. It is based on advice and guidance regarding procedures and practices in manufacturing with the result that food products are safe for human consumption
- legislation: GMP is not a legal obligation but it goes beyond the requirements set by legislation, therefore the manufacturer will have very high standards of food safety

- contact materials: although GMP is not a legal requirement there is a Regulation ((EC) No 2023/2006) regarding good manufacturing practice for materials and articles intended to come into contact with food. They may not transfer their constituents to food that could endanger human health or change the composition of food
- traceability: a requirement of GMP is that records must be kept of manufacture and distribution to enable a batch to be traced

AVAILABLE MARKS

Quality assurance standards

- rationale: quality assurance standards help to provide guarantees that food has been produced to a particular standard. These schemes are mainly voluntary arrangements although many manufacturers make certification in an assurance scheme a specification requirement for their suppliers
- certification: food assurance schemes are run as product certification schemes that are accredited by the United Kingdom Accreditation Service (UKAS). The schemes use regular independent inspections to check that members are meeting specific standards and often use logos on consumer products to indicate this fulfilment. The standards set by the assurance scheme, generally cover food safety and traceability, animal welfare and environmental protection
- best practice guidance: the Food Standards Agency makes best practice recommendations for food assurance schemes including: improving food safety issues such as veterinary health plans or pesticide residues; establishing links with official sites that contain relevant food safety data and electronic coding to increase product traceability
- examples; Lion Eggs: the only UK egg-specific assurance scheme that meets the standards of international accreditation standard; Red Tractor: an independent UK whole chain food assurance scheme which guarantees high standards of food safety protection from farm to pack

Food traceability

- traceability: manufacturers have the ability to track any food, feed, food-producing animal or substance that will be used for consumption, through all stages of production, processing and distribution. Traceability is a way of responding to potential risks that can arise in food and feed
- legal framework: the EU's General Food Law 2002 makes traceability compulsory for all food and feed businesses. It requires that all food and feed operators implement special traceability systems. They must be able to identify where their products have come from and where they are going and to rapidly provide this information to the appropriate authorities
- specific requirements: in addition to the general requirements, sector-specific legislation applies to certain categories of food products (fruit and vegetables, beef, fish, honey, olive oil) so that consumers can identify their origin and authenticity. There are also special traceability rules for genetically modified organisms (GMOs), which ensure that the GM content of a product can be traced. In the case of animals, producers must now "tag" them with details of their origin, slaughter and the traceability code of the abattoir. This should help eliminate illegal activities and food fraud

All other valid points will be given credit.

[20]

20

3 Discuss what is being done to minimise the risk to public health of the following chemical contaminants in food:

- dioxins
- mercury
- acrylamide
- arsenic in rice

(AO1, AO2, AO3)

AVAILABLE MARKS

Mark Band ([0]–[5])

Overall impression: basic

- inadequate knowledge and understanding of chemical contaminants listed
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to discuss what is being done to minimise the risk to public health of these chemical contaminants in food
- quality of written communication is basic

Mark Band ([6]–[10])

Overall impression: adequate

- adequate knowledge and understanding of chemical contaminants listed
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to discuss what is being done to minimise the risk to public health of these chemical contaminants in food
- quality of written communication is adequate

Mark Band ([11]–[15])

Overall impression: competent

- competent knowledge and understanding of chemical contaminants listed
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to discuss what is being done to minimise the risk to public health of these chemical contaminants in food
- quality of written communication is competent

Mark Band ([16]–[20])

Overall impression: highly competent

- highly competent knowledge and understanding of chemical contaminants listed
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to discuss what is being done to minimise the risk to public health of these chemical contaminants in food
- quality of written communication is highly competent

Examples of suitable points to be discussed by the candidate:

Dioxins

- prevention and control: the Codex Alimentarius Commission adopted a Code of Practice for the Prevention and Reduction of Dioxin and Dioxin-like PCB Contamination in Food and Feeds (CAC/RCP 62-2006). This gives guidance to national and regional authorities on preventive measures. It is expected that environmental controls will continue to reduce levels of dioxins in food

- monitoring of animal feed: contaminated animal feed is often the root-cause of dioxin contamination. Food and feed contamination monitoring systems are essential to ensure that tolerance levels are not exceeded. Commission Regulation 225/2012 set requirements to help avoid contamination of feed oils and fats by dioxins and dioxin-like PCBs. One of these requirements is for feed business operators to carry out analysis of oils, fats and compound feeds for the presence of dioxins and dioxin-like PCBs.
- limits: WHO established a provisional tolerable monthly intake (PTMI) of 70 picogram/kg per month. This level is the amount of dioxins that can be ingested over lifetime without detectable health effects. In the UK limits are slightly lower to help protect against the risk of adverse effects, including carcinogenicity
- consumer advice: trim fat from meat and consume low fat dairy products

AVAILABLE
MARKS

Mercury

- advice on fish consumption: limiting consumption of fish with high mercury content is the most effective way to achieve the health benefits of fish whilst minimising the risks posed by excessive exposure to mercury
- limits: EFSA has established Tolerable Weekly Intakes (TWIs) to protect consumers from adverse health effects posed by the possible presence of the main forms of mercury found in food: methylmercury and inorganic mercury. The Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment recognise that recommended limits may not be sufficiently protective for women who are pregnant or for breast-feeding mothers. This is due to the potential risk to the developing fetus. They recommend 0.1 µg/kg bw is more appropriate for these groups
- clean energy sources: burning coal for power and heat is a major source of mercury
- mercury mining to be eliminated and reduce use of mercury in gold extraction

Acrylamide

- advice for the food industry: FoodDrinkEurope (represents the food and drink industry's interests at European and international level) has produced a document that outlines ways of reducing acrylamide in food manufacture for a variety of foods and processes. FoodDrinkEurope has also developed brochures for small businesses on reducing acrylamide in processed food
- advice for food manufacturers: through recipe modification manufacturers have reduced acrylamide formation in foods such as crispbread, baked goods and potato crisps by changing ingredients. Caterers have been advised to cook French fries only until golden, rather than brown, and some crisp manufacturers have altered frying times and temperatures
- consumer advice: reduce cooking temperatures, especially for fried food. Potatoes should not be stored below 8°C

Arsenic in rice

- Code of Practice: there are international efforts to better understand the uptake of arsenic in rice. The Codex (Alimentarius) Committee on Contaminants in Food is compiling a Code of Practice for the Prevention and Reduction of Arsenic Contamination in Rice for rice producers to help control levels
- limits: the EC has set maximum limits for inorganic arsenic in rice and rice products of 0.20 mg/kg for white rice, and 0.25 mg/kg for brown rice.

A lower level of 0.10 mg/kg is set for products intended for children, and a slightly higher limit of 0.30 mg/kg for certain puffed rice products. These are reviewed on a regular basis and there may be scope to reduce them further in due course

- consumer advice: rinse rice well before cooking or cook with a high ratio of water to grain. Aromatic rice varieties such as basmati and jasmine have lower levels of arsenic

All other valid points will be given credit.

AVAILABLE MARKS

[20]

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4 Explain how the risk of microbial contamination can be minimised in establishments that serve food and outline how food law inspections help ensure food safety in these establishments. (AO1, AO2, AO3)

AVAILABLE MARKS

Mark Band ([0]–[5])

Overall impression: basic

- inadequate knowledge and understanding of microbial contamination in establishments that serve food
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to explain how the risk of microbial contamination can be minimised in establishments that serve food
- demonstrates a limited ability to outline how food law inspections ensure food safety in these establishments
- quality of written communication is basic

Mark Band ([6]–[10])

Overall impression: adequate

- adequate knowledge and understanding of microbial contamination in establishments that serve food
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to explain how the risk of microbial contamination can be minimised in establishments that serve food
- demonstrates an adequate ability to outline how food law inspections ensure food safety in these establishments
- quality of written communication is adequate

Mark Band ([11]–[15])

Overall impression: competent

- competent knowledge and understanding of microbial contamination in establishments that serve food
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to explain how the risk of microbial contamination can be minimised in establishments that serve food
- demonstrates a competent ability to outline how food law inspections ensure food safety in these establishments
- quality of written communication is competent

Mark Band ([16]–[20])

Overall impression: highly competent

- highly competent knowledge and understanding of microbial contamination in establishments that serve food
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to explain how the risk of microbial contamination can be minimised in establishments that serve food
- demonstrates a highly competent ability to outline how food law inspections ensure food safety in these establishments
- quality of written communication is highly competent

Examples of suitable points to be explained by the candidate:**Minimising contamination**

- have a HACCP plan: all food business must have a plan based on the principles of Hazard Analysis and Critical Control Point (HACCP). This will keep food safe from biological, chemical and physical safety hazards. Establishments must identify any hazards and the Critical Control Points (CCPs). They should set limits and monitor the CCPs, putting things right if there is a problem. Checks must be put in place to make sure the plan is working and up to date records are kept
- keep premises clean: general requirements stipulate that premises should be clean and maintained in good repair and condition. The layout, design, construction, site and size must allow for adequate cleaning and to carry out all tasks hygienically
- prevent cross-contamination: establishments should avoid bacteria spreading between food, surfaces or equipment and stop raw food touching or dripping on to ready-to-eat food
- effective cleaning: effective cleaning is necessary to get rid of bacteria on hands, equipment and surfaces and as a result stops harmful bacteria from spreading onto food
- temperature control: correct temperature control stops pathological bacteria from growing this includes appropriate chilling temperatures and cooking temperatures. During service cold food must be kept at 8°C or below, hot food must be kept at 63°C or above
- personal hygiene of staff: it is essential that staff follow good personal hygiene practices and are appropriately trained to handle food safely

AVAILABLE MARKS

Food law inspections

- food law inspections: carried out every six months or less frequently, depending on type of food operation and the results of previous inspections. The inspector usually does not make an appointment and has the right to enter and inspect premises, food, working methods and management procedures and records
- complaints: complaints are investigated to safeguard public health, to try to prevent the problem recurring and to ensure the establishment is serving food as safely and hygienically as is practically possible
- taking action: notices can be served which assist establishments in achieving high standards of food safety. Inspectors can also recommend a prosecution in serious cases
- food hygiene rating schemes: when a business is inspected it will be given a hygiene rating based on the hygiene standards. The purpose of the scheme is to allow consumers to make informed choices about the places where they eat out and, through these choices, encourage businesses to improve their hygiene standards

All other valid points will be given credit.

[20]

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5 Examine the work of the Food Standards Agency (FSA) in relation to food allergy and intolerance. (AO1, AO2, AO3)

AVAILABLE MARKS

Mark Band ([0]–[5])

Overall impression: basic

- inadequate knowledge and understanding of the FSA
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to examine the work of the FSA in relation to food allergy and intolerance
- quality of written communication is basic

Mark Band ([6]–[10])

Overall impression: adequate

- adequate knowledge and understanding of the FSA
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to examine the work of the FSA in relation to food allergy and intolerance
- quality of written communication is adequate

Mark Band ([11]–[15])

Overall impression: competent

- competent knowledge and understanding of the FSA
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to examine the work of the FSA in relation to food allergy and intolerance
- quality of written communication is competent

Mark Band ([16]–[20])

Overall impression: highly competent

- highly competent knowledge and understanding of the FSA
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to examine the work of the FSA in relation to food allergy and intolerance
- quality of written communication is highly competent

Examples of suitable points to be examined by the candidate:

- legislation: FSA develops policies that allow allergenic and food intolerant consumers to make informed choices about their diet. They negotiate and implement legislation to improve statutory controls on the labelling of food allergens. The FSA works closely with all parts of the food industry such as manufacturers, retailers, catering companies and trade bodies in order to help develop new legislation as well as guidance and compliance with the legislation
- enforcement: implementing allergen labelling legislation rests with District Council/Local Authorities but investigating incidents to ensure food safety is protected and food is correctly described is a key part of the Agency's work
- labelling: the FSA lobby on behalf of the UK to ensure that EU decisions address the needs of UK consumers and industry. They also produce best practice guidance to advise industry and enforcement bodies in areas not currently covered by EU legislation on labelling

- advisory warnings: FSA works to reduce the unnecessary use of 'may contain' labelling and provide clear advice to the public on why these labelling terms are used and what they mean
- industry guidance: FSA provides advice and recommendations to industry and enforcement bodies to encourage greater awareness and control of food allergens through the food supply chain
- training/education: an online interactive food allergy training module is provided by the FSA. This highlights steps that should be followed to make sure good practice is used in the manufacture and production of food
- consumer advice: information and guidance about food allergy and intolerance to consumers, carers and other stakeholders is available. The FSA offers assistance in easy to understand language and terminology via their website and through published materials to help consumers make informed and safe food choices
- resources: the FSA provides a wide range of guidance and materials to assist local authorities and food businesses in promoting, implementing and complying with the EU regulations
- allergy alerts: when allergy labelling is incorrect or if there is a food allergy risk, the food product has to be withdrawn or recalled to protect food allergic individuals. Consumers can sign up to receive a free email or text message each time FSA issue an allergy alert about a food product. Allergy Alert can also be followed on Twitter and Facebook
- research: the FSA commission scientific and consumer research on food allergy and intolerance to develop an improved understanding of the important issues and to ensure that policies are based on robust scientific evidence

All other valid points will be given credit.

[20]

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Section B

60

Option B

85

Total

85

**AVAILABLE
MARKS**