



Rewarding Learning

**ADVANCED SUBSIDIARY (AS)
General Certificate of Education**

Nutrition and Food Science

Assessment Unit AS 2

assessing

Diet, Lifestyle and Health

[SNF21]

Assessment

**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.

Specific Marking Instructions for Section A AS2

AOs to be considered vary from question to question in Section A and are identified at the end of the question. Refer to descriptions of AOs on Page 2.

Use the levels of response on Page 3 for further guidance on the use of the mark bands for each question.

Although QWC is not assessed in this section, use of appropriate vocabulary and key terms associated with AS2 is expected and can be used to differentiate between levels of response.

All answers are expected to be short and precise. They should not include irrelevant or minor details. A glossary of command words can be found on the website for GCE Nutrition and Food Science.

The command word discuss requires a more in-depth and critical answer.

Section A

AVAILABLE
MARKS

1 (a) Define the term cardiovascular disease (CVD). (AO1, AO2)

Cardiovascular disease is a general term for conditions affecting the heart or blood vessels.

[1] basic definition

[2] competent definition [2]

(b) Describe how cardiovascular disease (CVD) develops. (AO1, AO2)

- the walls of the arteries become furred up with fatty deposits called atheroma. This compromises blood flow
- when the arteries become partially or totally blocked the heart must work much harder to pump blood and oxygen around the body

All other valid points will be given credit

[1]–[2] basic description

[3] competent description

[4] highly competent description [4]

(c) Explain why including oily fish and high fibre foods in the diet may help reduce the risk of cardiovascular disease. (AO1, AO2, AO3)

oily fish

- oily fish contains less saturated fat than other animal foods or processed foods; this reduces the high levels of harmful LDL cholesterol reducing the risk of CVD
- oily fish contains polyunsaturated omega 3; omega 3 helps to reduce CVD by helping to lower harmful LDL cholesterol

high fibre foods

- eating higher fibre foods such as wholegrains, pulses, fruits and vegetables help lower cardiovascular disease as these foods provide satiety and helps maintain a healthy weight. Excess weight is a risk factor for CVD
- foods high in soluble fibre, e.g. baked beans, oats, peas help to reduce harmful LDL cholesterol

All other valid points will be given credit

[1]–[2] basic explanation

[3]–[4] competent explanation

[5]–[6] highly competent explanation [6]

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2 (a) State **one** health problem associated with being overweight. (AO1)

- cardiovascular disease (CVD)
- type 2 diabetes
- depression

[1]

(b) Describe **two** lifestyle recommendations to help individuals lose weight. (AO1, AO2)

- engage in more physical activity, reduce sedentary activities as this reduces a positive energy balance as exercise may burn off excess calories
- don't skip breakfast as it helps reduce hunger and snacking throughout the day on foods high in fat and sugar
- reduce consumption of alcoholic beverages to help lose weight as alcohol contains 7 calories per gram

All other valid points will be given credit

[1]–[2] basic description

[3] competent description

[4] highly competent description

[4]

(c) Discuss **three** barriers to achieving a healthy weight. (AO1, AO2, AO3)

- eating out; individuals who eat at restaurants may consume several courses or eat foods higher in fat and sugar that contribute to weight gain and prevent achieving a healthy weight
- increased consumption of convenience foods; these foods often have a higher energy density than homemade foods and when consumed frequently may prevent achieving healthy weight
- limited resources; individuals who lack time or have limited income may not achieve a healthy weight as they do not have the resources to purchase or cook homemade, low calorie foods

All other valid points will be given credit

[1]–[2] basic discussion

[3]–[4] competent discussion

[5]–[6] highly competent discussion

[6]

AVAILABLE
MARKS

11

3 (a) Explain why the Estimated Average Requirement (EAR) for energy increases for pregnant women in the last three months of pregnancy. (AO1, AO2)

- the EAR for pregnant women increases by 200 kcal/day in the last three months as energy is needed for the growth of the foetus, uterus and breast tissue
- it is also needed to enable fat to be deposited in the mother's body for the production of milk for breastfeeding

All other valid points will be given credit

[1] basic explanation

[2] competent explanation [2]

(b) Using the data in the table below, explain the decrease in energy requirements for males 65 years and over. (AO1, AO2, AO3)

- energy requirements decrease gradually after the age of 65 in men
- energy requirements fall with advancing age due to a decrease in lean body tissue and an increase in fat. 40% of tissue mass may be lost by the age of 70 years
- decreased levels of physical activity by some older males may require less energy
- over the age of 74 mobility or disability may reduce movement. Less energy is required to avoid weight gain

All other valid points will be given credit

[1]–[2] basic explanation

[3] competent explanation

[4] highly competent explanation [4]

(c) Explain what is meant by BMR. (AO1, AO2)

Basal metabolic rate (BMR) is the amount of energy required to maintain the body functions such as breathing, heartbeat and body temperature when totally at rest, e.g. sleeping

[1] basic explanation

[2] competent explanation [2]

(d) Describe the thermic effect of food as a factor affecting energy expenditure. (AO1, AO2)

- the intake of food stimulates metabolism causing an increase in metabolic rate after a meal is eaten
- the energy produced is expended as heat and known as the thermogenic effect of food
- thermogenesis accounts for 10% of total energy expenditure in 24 hours
- the thermogenic effect of food is greater with protein and carbohydrate containing meals than with fats

All other valid points will be given credit

[1]–[2] basic description

[3] competent description

[4] highly competent description [4]

Section A

AVAILABLE
MARKS

12

35

Section B

AVAILABLE
MARKS

Quality of written communication is assessed in this section.

Answer three questions from this section.

- 4 Explain how a healthy balanced diet can help reduce the risk of certain cancers. (AO1, AO2, AO3)

Mark Band ([0]–[3])

Overall impression: basic

- inadequate knowledge and understanding of a healthy balanced diet
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to explain how a healthy balanced diet helps reduce the risk of certain cancers
- quality of written communication is basic

Mark Band ([4]–[7])

Overall impression: adequate

- adequate knowledge and understanding of a healthy balanced diet
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to explain how a healthy balanced diet helps reduce the risk of certain cancers
- quality of written communication is adequate

Mark Band ([8]–[11])

Overall impression: competent

- competent knowledge and understanding of a healthy balanced diet
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to explain how a healthy balanced diet helps reduce the risk of certain cancers
- quality of written communication is competent

Mark Band ([12]–[15])

Overall impression: highly competent

- highly competent knowledge and understanding of a healthy balanced diet
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to explain how a healthy balanced diet helps reduce the risk of certain cancers
- quality of written communication is highly competent

Examples of suitable points to be explained by the candidate:

- a diet rich in wholegrains; wholegrains provide fibre. Diets high in fibre provide some protection against colorectal cancer as fibre encourages removal of carcinogens by faster transit through the bowel
- a diet rich in fruit and vegetables; the antioxidants, vitamins A, C and E provided in fruit and vegetables play a protective role against damage to DNA preventing oral cancers. Phytochemicals, e.g. lycopene found in tomatoes and carotenoids protect against prostate cancer
- a diet low in fatty foods; diets high in fat are also high in calories and contribute to obesity, which is associated with many cancers due to greater

adiposity, e.g. overweight at puberty and post menopause. There is some evidence of increased risk for breast/bowel cancer due to oestrogen in the fat tissue: obese individuals have more fat tissue therefore raised oestrogen levels

- a diet low in red meat and processed meat; current guidelines suggest that red meat/processed meats should be reduced to 70 g per day. These foods may increase bowel cancer
- a diet low in convenience/processed foods; these foods are high in salt, which may cause gastric cancer. High levels of salt reduce gastric acidity, which in turn promotes conversion of nitrates to nitrites, which are carcinogenic
- a diet low in alcohol; alcohol is converted into acetaldehyde which damages DNA and stops cells from repairing

All other valid points will be given credit

[15]

AVAILABLE
MARKS

15

Q4 Specific Marking Instructions

- Responses should provide evidence of all 3 AOs. However, there is a considerably heavier weighting for AO2 in this question. Refer to descriptions of AOs on Page 2.
- The candidate should provide evidence of their ability to follow the command word explain. Explain means to clarify a topic so candidates should demonstrate their ability to structure a clear and logically coherent response. QWC is important when judging responses to this question.
- Assess the candidate's QWC using the detailed guidance on Page 3.
- When you have decided which mark band is the 'best fit' for the response, use the levels of response on Page 3 to identify a final mark.
- Remember that the list of suitable points are examples only. The list is not prescriptive, and candidates should not be penalised for omissions. Refer to the general marking instructions on Page 2 for further guidance.

- 5 Discuss the nutritional consequences of excessive alcohol consumption for adult men. (AO1, AO2, AO3)

AVAILABLE
MARKS

Mark Band ([0]–[3])

Overall impression: basic

- inadequate knowledge and understanding of nutritional consequences of excessive alcohol consumption
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to discuss the nutritional consequences of excessive alcohol consumption for adult men
- quality of written communication is basic

Mark Band ([4]–[7])

Overall impression: adequate

- adequate knowledge and understanding of nutritional consequences of excessive alcohol consumption
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to discuss the nutritional consequences of excessive alcohol consumption for adult men
- quality of written communication is adequate

Mark Band ([8]–[11])

Overall impression: competent

- competent knowledge and understanding of nutritional consequences of excessive alcohol consumption
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to discuss the nutritional consequences of excessive alcohol consumption for adult men
- quality of written communication is competent

Mark Band ([12]–[15])

Overall impression: highly competent

- highly competent knowledge and understanding of nutritional consequences of excessive alcohol consumption
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to discuss the nutritional consequences of excessive alcohol consumption for adult men
- quality of written communication is highly competent

Examples of suitable points to be discussed by the candidate:

- calories in alcohol contributing to weight gain; alcohol contains 7 calories per gram. These are 'empty calories' contributing to weight gain in adult men especially in the mid-section of the body
- fat metabolism; drinking alcohol reduces the amount of fat the body burns for energy. The body can store protein, carbohydrate and fats but alcohol is not stored. The body wants to get rid of it as quickly as possible, so this process takes priority over absorbing nutrients and burning fat. Fat metabolism in the liver becomes abnormal and leads to bigger waists
- reduced mineral absorption; alcohol decreases the absorption of iron and

zinc. Zinc is required by men to produce testosterone and increasing sperm count. Iron levels may be low as alcohol may damage lining in the intestine leading to anaemia in males

- control of blood glucose levels is less effective; insulin production is reduced as the pancreas is inflamed
- cardiovascular disease; alcohol may increase LDL cholesterol in the liver, which may have an impact on cardiovascular disease. Men have a higher risk than women

All other valid points will be given credit

[15]

AVAILABLE
MARKS

15

Q5 Specific Marking Instructions

- Responses should provide evidence of all 3 AOs. However, there is a considerably heavier weighting for AO2 in this question. Refer to descriptions of AOs on Page 2.
- The candidate should provide evidence of their ability to follow the command word discuss. They can do this by discussing the nutritional consequences in relation to adult men specifically.
- Assess the candidate's QWC using the detailed guidance on Page 3.
- When you have decided which mark band is the 'best fit' for the response, use the levels of response on Page 3 to identify a final mark.
- Remember that the list of suitable points are examples only. The list is not prescriptive, and candidates should not be penalised for omissions. Refer to the general marking instructions on Page 2 for further guidance.

- 6 Describe current trends in leisure patterns and explain how they have increased the prevalence of diet-related disorders. (AO1, AO2, AO3)

AVAILABLE
MARKS

Mark Band ([0]–[3])

Overall impression: basic

- inadequate knowledge and understanding of current trends in leisure patterns
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to describe the current trends in leisure patterns
- demonstrates a limited ability to explain how leisure patterns increase the prevalence of diet-related disorders
- quality of written communication is basic

Mark Band ([4]–[7])

Overall impression: adequate

- adequate knowledge and understanding of current trends in leisure pattern
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to describe the current trends in leisure patterns
- demonstrates an adequate ability to explain how leisure patterns increase the prevalence of diet-related disorders
- quality of written communication is adequate

Mark Band ([8]–[11])

Overall impression: competent

- competent knowledge and understanding of current trends in leisure pattern
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to describe the current trends in leisure patterns
- demonstrates a competent ability to explain how leisure patterns increase the prevalence of diet-related disorders
- quality of written communication is competent

Mark Band ([12]–[15])

Overall impression: highly competent

- highly competent knowledge and understanding of current trends in leisure patterns
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to describe the current trends in leisure patterns
- demonstrates a highly competent ability to explain how leisure patterns increase the prevalence of diet-related disorders
- quality of written communication is highly competent

Examples of suitable points to be described and explained by the candidate:

- increase in mass media and screen time; watching TV, reading, listening to music, mobile phones and gaming have decreased participation in physical activity. This may contribute to positive energy balance, overweight and obesity due to less physical activity
- increase in leisure time spent indoors; more time spent indoors may be linked to boredom and overeating of high fat, sugar and salt foods/drinks. This may increase the risk of type 2 diabetes, cardiovascular disease and obesity
- increase in eating out and consumption of takeaway food for leisure; more disposable income is available to spend on this leisure pattern but this may increase the risk of overweight, obesity and cardiovascular disease
- decrease in work/life balance; more people are in full time employment or working longer hours. Employees have a lower amount of leisure time. The UK population work the longest hours in Europe. This reduction in physical activity and possible reliance on convenience foods may result in overweight, cancer and cardiovascular disease
- increase in travel for leisure; more individuals and families travel to foreign countries or take leisure breaks. This may contribute to diet-related disorders as they may overeat on high calorie foods or consume alcohol
- decrease in outdoor play; lack of access to green spaces, parks, sports facilities or safety concerns have led to leisure time increasingly spent indoors. Children and adults may increase their risk of overweight, cardiovascular disease, type 2 diabetes and some cancers in later life

All other valid points will be given credit

[15]

15

AVAILABLE
MARKS

Q6 Specific Marking Instructions

- Responses should provide evidence of all 3 AOs. However, there is a considerably heavier weighting for AO2 in this question. Refer to descriptions of AOs on Page 2.
- The candidate should provide evidence of their ability to follow the command word describe. The response should be descriptive and recall facts in detail and with accuracy.
- Assess the candidate's QWC using the detailed guidance on Page 3.
- When you have decided which mark band is the 'best fit' for the response, use the levels of response on Page 3 to identify a final mark.
- Remember that the list of suitable points are examples only. The list is not prescriptive, and candidates should not be penalised for omissions. Refer to the general marking instructions on Page 2 for further guidance.

- 7 Explain the health benefits of physical activity for children aged 5–12 years.
(AO1, AO2, AO3)

AVAILABLE
MARKS

Mark Band ([0]–[3])

Overall impression: basic

- inadequate knowledge and understanding of the health benefits of physical activity
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to explain the health benefits of physical activity for children aged 5–12 years
- quality of written communication is basic

Mark Band ([4]–[7])

Overall impression: adequate

- adequate knowledge and understanding of the health benefits of physical activity
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to explain the health benefits of physical activity for children aged 5–12 years
- quality of written communication is adequate

Mark Band ([8]–[11])

Overall impression: competent

- competent knowledge and understanding of the health benefits of physical activity
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to explain the health benefits of physical activity for children aged 5–12 years
- quality of written communication is competent

Mark Band ([12]–[15])

Overall impression: highly competent

- highly competent knowledge and understanding of the health benefits of physical activity
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to explain the health benefits of physical activity for children aged 5–12 years
- quality of written communication is highly competent

Examples of suitable points to be described and explained by the candidate:

- strengthen muscle and bone; physical activities that use body weight or work against resistance strengthen muscle and bone, e.g. hopping, skipping, tennis
- improves vascular health; the heart responds to exercise by becoming stronger and more efficient. This helps ward off disease in later life. Exercise also increases the flexibility of the walls of the blood vessels
- maintains a healthy weight; children who participate in physical activity expend energy and reduce the risk of weight gain. Leisure time used for physical activity reduces time for snacking. Physical activity prevents or

- reduces the accumulation of unused calories as stored fat
 - improves mental health; children who participate in moderate or vigorous activity release endorphins that help them to feel good about themselves. Children who participate in sports with others develop self-worth and confidence as it enhances emotional well-being. Physical activity encourages the child to develop strength, stamina and skills that improve self-esteem
 - develops social skills; children who attend classes or participate in team sports build confidence and interact with others. The child has a sense of belonging and opportunities to meet new friends
 - improves concentration and learning; physical activity helps improve concentration and thinking skills as well as coordination and balance
- All other valid points will be given credit

[15]

**AVAILABLE
MARKS**

15

Q7 Specific Marking Instructions

- Responses should provide evidence of all 3 AOs. However, there is a considerably heavier weighting for AO2 in this question. Refer to descriptions of AOs on Page 2.
- The candidate should provide evidence of their ability to follow the command word explain. Explain means to clarify a topic so candidates should demonstrate their ability to structure a clear and logically coherent response. QWC is important when judging responses to this question.
- Assess the candidate's QWC using the detailed guidance on Page 3.
- When you have decided which mark band is the 'best fit' for the response, use the levels of response on Page 3 to identify a final mark.
- Remember that the list of suitable points are examples only. The list is not prescriptive, and candidates should not be penalised for omissions. Refer to the general marking instructions on Page 2 for further guidance.

Section B

45

Total

80

