



**ADVANCED SUBSIDIARY (AS)  
General Certificate of Education  
2018**

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## **Nutrition and Food Science**

**Assessment Unit AS 2**

*assessing*

**Diet, Lifestyle and Health**

**[SNF21]**

**MONDAY 21 MAY, MORNING**

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**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.

## Section A

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- 1 (a) State the current physical activity guidelines for children and young people. (AO1)
- all children and young people should engage in physical activity of moderate to vigorous intensity for at least 60 minutes every day [1]
- (b) Suggest **two** reasons why leisure patterns in children may increase their risk of obesity. (AO1, AO2)
- less leisure time is used for physical activities
  - more time spent on computers or watching television
- All other valid points will be given credit [2]
- (c) Identify **two** health problems that can occur in overweight children. (AO1)
- obesity
  - Type 2 diabetes
  - joint problems
  - respiratory problems
  - disturbed sleep
  - low self esteem/depression/psychological
- All other valid points will be given credit [2]

5

## 2 (a) Define the term cholesterol. (AO1)

- cholesterol is a waxy fat like substance which occurs naturally in all animal tissues. It is used in the body for building cell membranes, sex hormones and bile acids.

All other valid points will be given credit.

[1] brief or limited definition

[2] full definition

[2]

(b) Name **three** non-modifiable risk factors for cardiovascular disease. (AO1)

- age
- gender
- hereditary/genetic risks
- socio-economic status
- ethnicity

All other valid points will be given credit

[3]

## (c) Explain the relationship between:

## (i) high sodium intake and cardiovascular disease. (AO1, AO2)

- high sodium intake is associated with a higher risk of hypertension
- hypertension increases the risk of CVD because it damages the blood vessel walls and plays a part in the development of atherosclerosis
- hypertension is the greatest risk factor for strokes because it increases the risk of a blood clot in the brain
- hypertension increases the risk of CVD due to the extra strain on the kidneys and arteries

All other valid points will be given credit.

[1]–[2] brief or limited explanation

[3]–[4] full explanation with reference to high sodium intake

[4]

## (ii) smoking and cardiovascular disease. (AO1, AO2)

- smoking damages the lining of the arteries which reduces the space for blood to flow
- smoking reduces the oxygen carrying capacity of the red blood cells owing to higher levels of carbon monoxide
- nicotine in cigarettes makes the body produce adrenaline which makes the heart beat faster and raises blood pressure

All other valid points will be given credit.

[1]–[2] brief or limited explanation

[3]–[4] full explanation with reference to reduced oxygen and increased carbon monoxide

[4]

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**3** Describe the possible impact of shift work on eating patterns. (AO1, AO2)

- family meal patterns; patterns of shift work may disrupt families eating at the same time or sitting around the table eating together, and may result in eating alone or reheating meals
- increased use of ready meals; there is less time to prepare meals from scratch using fresh produce including fruit and vegetables daily; shift patterns of work may lead to eating at unsociable hours
- eating outside the home; shift work may increase the likelihood of eating more often away from home, encouraging consumption of fast food from outlets open 24 hours

[1]–[2] brief description with limited details

[3]–[4] competent description with relevant examples and reference to eating patterns

[5]–[6] very good description, highly competent understanding of the impact of shift work on eating patterns [6]

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MARKS

6

**4** Outline some of the barriers that students living away from home face when trying to make healthy food choices. (AO1, AO2)

- living conditions; if students are living in catered halls there may be a lack of choice and food may only be available at set times; if students are living alone it may be difficult cooking for one and may result in reliance on convenience foods
- limited income; there may be less money available to spend on food and a reliance on buying from local shops which may be more expensive
- resources; there may be limited cooking facilities and equipment and a lack of time available for cooking and shopping; lack of cooking skills may result in a reliance on fast food

[0]–[2] brief outline with limited details of barriers

[3]–[4] competent outline with relevant examples of barriers and reference to students

[5] highly competent outline with very good knowledge of a range of barriers and reference to students [5]

5

- 5 Using the information in the graph below, explain why obesity levels change by age and gender. (AO2, AO3)

Age differences:

- obesity increases with age which may be attributed to decreasing energy needs
- younger ages are less likely to be obese which may be linked to higher activity rates and a higher energy expenditure
- BMR reduces with age due to reduced muscle mass

Gender differences:

- men are more likely than women to carry excess weight
- men are less likely than women to recognise they were overweight and attempt to slow down
- carrying excess weight is seen as more socially acceptable for men than women

[0]–[2] brief explanation with limited range of reasons

[3]–[4] competent explanation with relevant range of reasons

[5]–[6] highly competent explanation with very good range of reasons [6]

**Section A**

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6

**35**

## Section B

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MARKS

Quality of written communication is assessed in this section.

- 6 The Chief Medical Officers for the UK recommend that if you are pregnant, or planning to become pregnant, the safest approach is not to drink alcohol.

*Source adapted from: www.nhs.uk*

Discuss the reasons for this advice. (AO1, AO2, AO3)

### Mark Band ([0]–[3])

Overall impression: basic

- inadequate knowledge and understanding of the advice not to drink alcohol during pregnancy
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to discuss the reasons for this advice
- quality of written communication is basic

### Mark Band ([4]–[7])

Overall impression: adequate

- adequate knowledge and understanding of the advice not to drink alcohol during pregnancy
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to discuss the reasons for this advice
- quality of written communication is adequate

### Mark Band ([8]–[11])

Overall impression: competent

- competent knowledge and understanding of the advice not to drink alcohol during pregnancy
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to discuss the reasons for this advice
- quality of written communication is competent

### Mark Band ([12]–[15])

Overall impression: highly competent

- highly competent knowledge and understanding of the advice not to drink alcohol during pregnancy
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to discuss the reasons for this advice
- quality of written communication is highly competent

### Examples of suitable points to be proposed by the candidate:

- risk of miscarriage, premature birth and low birth weight; there is an increased risk in women who drink alcohol during the first trimester and the risks are higher if the mother has been binge drinking
- malabsorption of nutrients; drinking alcohol in pregnancy can affect the

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<p>bioavailability and absorption of nutrients especially vitamins B1, B12, folic and zinc</p> <ul style="list-style-type: none"> <li>• toxicity; all alcohol passes from the mother's blood to the baby through the placenta and this results in toxicity because the baby's liver is underdeveloped and cannot process harmful toxins</li> <li>• brain damage; alcohol results in damage to the baby's brain cells, nervous system and structure of the brain leading to cognitive impairment and learning problems</li> <li>• physical disabilities; when the mother drinks alcohol there is an increased likelihood of the baby developing physical abnormalities or organ damage and malformations in sight and/or hearing</li> <li>• Fetal Alcohol Syndrome (FAS); this covers a wide range of symptoms which is linked to the mother's alcohol consumption and results in a range of physical symptoms and distinctive characteristics in the baby</li> </ul> <p>All other valid points will be given credit</p> <p style="text-align: right;">[15]</p>	15

- 7 Justify **three** dietary recommendations to reduce the risk of cancer. (AO1, AO2, AO3)

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### Mark Band ([0]–[3])

Overall impression: basic

- inadequate knowledge and understanding of three dietary recommendations to reduce the risk of cancer
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to justify these recommendations
- quality of written communication is basic

### Mark Band ([4]–[7])

Overall impression: adequate

- adequate knowledge and understanding of three dietary recommendations to reduce the risk of cancer
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to justify these recommendations
- quality of written communication is adequate

### Mark Band ([8]–[11])

Overall impression: competent

- competent knowledge and understanding of three dietary recommendations to reduce the risk of cancer
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to justify these recommendations
- quality of written communication is competent

### Mark Band ([12]–[15])

Overall impression: highly competent

- highly competent knowledge and understanding of three dietary recommendations to reduce the risk of cancer
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to justify these recommendations
- quality of written communication is highly competent

### Examples of suitable points to be explained by the candidate:

- eat more fibre; high fibre foods increase the bulk of the faeces and can protect against digestive cancers including colo-rectal cancer; fibre increases transit time through the digestive tract; fibre reduces the pH of the bowel which allows bile acids to bind to calcium preventing them being converted to mutagenic bile acids
- increase fruit and vegetable intake; these provide antioxidants which protect against free radical damage and oxidation in all cells and help to lower cancer risk; fruit and vegetables also contain lycopene and flavonols which protect against a wide range of cancers
- reducing the intake of red and processed meat; excess meat is linked with DNA damage and a diet high in red and processed meats contains large amounts of salt and nitrates which increases the risk of specific cancers in

the stomach and colon, those who eat less than two portions of meat a week have lower risks of cancer

- eating a low fat diet; fat is a promoter of carcinogenesis and a high fat diet is associated with an increased risk of breast and endometrial cancer in post-menopausal women, eating less fat also decreases obesity risk which is a contributory risk factor for many cancers
- drinking alcohol in moderation; excessive amounts of alcohol and binge drinking is associated with a range of cancers including oesophagus, mouth, throat and liver

All other valid points will be given credit

[15]

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15

- 8 Explain why the amount of energy needed by the body varies from person to person. (AO1, AO2, AO3)

### Mark Band ([0]–[3])

Overall impression: basic

- inadequate knowledge and understanding of energy
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to explain why the amount of energy needed by the body varies from person to person
- quality of written communication is basic

### Mark Band ([4]–[7])

Overall impression: adequate

- adequate knowledge and understanding of energy
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to explain why the amount of energy needed by the body varies from person to person
- quality of written communication is adequate

### Mark Band ([8]–[11])

Overall impression: competent

- competent knowledge and understanding of energy
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to explain why the amount of energy needed by the body varies from person to person
- quality of written communication is competent

### Mark Band ([12]–[15])

Overall impression: highly competent

- highly competent knowledge and understanding of energy
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to explain why the amount of energy needed by the body varies from person to person
- quality of written communication is highly competent

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

- individual requirements; energy requirements are linked to, age, gender, body size and physical activity and so needs will vary
- individual metabolism; all energy requirements are linked to individual basal metabolic rates and their physical activity level, summarised as  $EAR = BMR \times PAL$
- activity of the thyroid gland; there can be considerable differences in individuals due to the thyroid gland and an overactive or underactive thyroid will affect energy requirements
- illness; energy requirements will vary during times of illness and more energy is needed to fight infection as fever drains energy stores
- growth, pregnancy and lactation; extra energy is needed during periods of rapid growth in young children and teenagers to make extra tissue and during pregnancy and lactation energy needs increase

All other valid points will be given credit

[15]

AVAILABLE  
MARKS

15

- 9 Explain how advertisements for food and drink may prevent consumers from making healthy food choices. (AO1, AO2, AO3)

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### Mark Band ([0]–[3])

Overall impression: basic

- inadequate knowledge and understanding of how advertisements for food and drink can prevent consumers from making healthy food choices
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to explain how such advertisements can prevent consumers from making healthy food choices
- quality of written communication is basic

### Mark Band ([4]–[7])

Overall impression: adequate

- adequate knowledge and understanding of how advertisements for food and drink can prevent consumers from making healthy food choices
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to explain how such advertisements can prevent consumers from making healthy food choices
- quality of written communication is adequate

### Mark Band ([8]–[11])

Overall impression: competent

- competent knowledge and understanding of how advertisements for food and drink can prevent consumers from making healthy food choices
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to explain how such advertisements can prevent consumers from making healthy food choices
- quality of written communication is competent

### Mark Band ([12]–[15])

Overall impression: highly competent

- highly competent knowledge and understanding of how advertisements for food and drink can prevent consumers from making healthy food choices
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to explain how such advertisements can prevent consumers from making healthy food choices
- quality of written communication is highly competent

### Examples of suitable points to be explained by the candidate:

- consumer perception; a wide range of strategies are used in advertisements which are often targeted at vulnerable groups such as teenagers and young children who are not aware of all the marketing ploys
- celebrity endorsement; used to make claims and endorse products which are not necessarily healthy, e.g. celebrity chef ready made sauces, these may appear to be superior products but can be high in salt, fat and sugar
- frequency of exposure; there are fewer advertisements for healthy foods and there are more advertisements for unhealthy foods. Repeated frequent exposure may be a barrier to healthy food choices

- misleading terms and claims; consumers may be persuaded to buy products based on terms such as 'superfoods, 'pure and healthy', 'good for growing kids,' and they may persuade consumers that they are healthy products and consumers believe they are making healthy choices. Advertisements may provide too many details making it difficult to make sense of the nutritional value

All other valid points will be given credit

[15]

**Section B**

**Total**

**AVAILABLE  
MARKS**

15

**45**

**80**