

**Published Mark Scheme for  
GCE AS Home Economics**

**January 2009**

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**NORTHERN IRELAND GENERAL CERTIFICATE OF SECONDARY EDUCATION (GCSE)  
AND NORTHERN IRELAND GENERAL CERTIFICATE OF EDUCATION (GCE)**

**MARK SCHEMES (2009)**

**Foreword**

***Introduction***

Mark Schemes are published to assist teachers and students in their preparation for examinations. Through the mark schemes teachers and students will be able to see what examiners are looking for in response to questions and exactly where the marks have been awarded. The publishing of the mark schemes may help to show that examiners are not concerned about finding out what a student does not know but rather with rewarding students for what they do know.

***The Purpose of Mark Schemes***

Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of 16- and 18-year-old students in schools and colleges. The job of the examiners is to set the questions and the mark schemes; and the job of the revisers is to review the questions and mark schemes commenting on a large range of issues about which they must be satisfied before the question papers and mark schemes are finalised.

The questions and the mark schemes are developed in association with each other so that the issues of differentiation and positive achievement can be addressed right from the start. Mark schemes therefore are regarded as a part of an integral process which begins with the setting of questions and ends with the marking of the examination.

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all the markers are following exactly the same instructions and making the same judgements in so far as this is possible. Before marking begins a standardising meeting is held where all the markers are briefed using the mark scheme and samples of the students' work in the form of scripts. Consideration is also given at this stage to any comments on the operational papers received from teachers and their organisations. During this meeting, and up to and including the end of the marking, there is provision for amendments to be made to the mark scheme. What is published represents this final form of the mark scheme.

It is important to recognise that in some cases there may well be other correct responses which are equally acceptable to those published: the mark scheme can only cover those responses which emerged in the examination. There may also be instances where certain judgements may have to be left to the experience of the examiner, for example, where there is no absolute correct response – all teachers will be familiar with making such judgements.

The Council hopes that the mark schemes will be viewed and used in a constructive way as a further support to the teaching and learning processes.



## CONTENTS

	<b>Page</b>
AS 1: Assessment Unit AS 1	1



New  
Specification



*Rewarding Learning*

**ADVANCED SUBSIDIARY (AS)  
General Certificate of Education  
January 2009**

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## **Home Economics**

**Assessment Unit AS 1**

*assessing*

**Nutrition for Optimal Health**

**[AN111]**

**MONDAY 12 JANUARY, AFTERNOON**

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# **MARK SCHEME**

## Section A

AVAILABLE  
MARKS

1 State **three** significant sources of water for young children. (AO1)

Any three from:

- drinking water
- fruit
- vegetables
- milk
- fruit juices

All other valid points will be given credit. [3]

3

2 Identify **four** situations where you would possibly recommend vitamin D supplementation. (AO1, AO2)

- housebound individuals
- during pregnancy and lactation
- Asian population
- exclusively breastfed infants

All other valid points will be given credit. [4]

4

3 Explain the nutritional value of Quorn. (AO1, AO2)

- lower energy value than meat; helps maintain a healthy weight
- low in saturated fat, no cholesterol; ability to lower LDL cholesterol
- a source of HBV protein; similar quality to meat, containing all indispensable amino acids
- contains NSP; which is useful for a healthy digestive system

All other valid points will be given credit. [4]

4

4 Consider the effects on health of a diet deficient in vitamin A. (AO1, AO2)

- night blindness: body is unable to synthesise rhodopsin
- severe and prolonged deficiency can lead to blindness
- growth rate of children can be retarded
- health of skin can be affected
- resistance to infection is lowered due to the poor condition of the mucous lining of the respiratory tract
- xerophthalmia: tear glands become blocked, membranes at front of eye are dry and inflamed [5]

5



- 5 What do you understand by the term trans fatty acids? (AO1, AO2)
- formed during a process of hydrogenation when hydrogen is added across the double bond of a cis unsaturated fatty acid
  - can have an adverse effect on health as they raise LDL and total cholesterol in the blood which increases the risk of heart disease
  - recommended that trans fatty acids provide 2% of daily total food energy intake

All other valid points will be given credit. [5]

5

- 6 Explain the role of NSP in protecting against a range of diseases. (AO1, AO2, AO3)

**Mark Band ([0]–[2])**

Overall impression: basic

- inadequate knowledge and understanding of NSP
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to explain the role of NSP in protecting against a range of diseases
- demonstrates a limited ability to focus on the role of NSP in protecting against a range of diseases
- quality of written communication is basic

**Mark Band ([3]–[5])**

Overall impression: competent

- reasonable knowledge and understanding of NSP
- demonstrates a good ability to apply appropriate knowledge and understanding to the question
- demonstrates a good ability to explain the role of NSP in protecting against a range of diseases
- demonstrates a good ability to focus on the role of NSP in protecting against a range of diseases
- quality of written communication is competent

**Mark Band ([6]–[8])**

Overall impression: highly competent

- clear knowledge and understanding of NSP
- demonstrates a very good ability to apply appropriate knowledge and understanding to the question
- demonstrates a very good attempt to explain the role of NSP in protecting against a range of diseases
- demonstrates a very good ability to focus on the role of NSP in protecting against a range of diseases
- quality of written communication is highly competent

**Some examples of suitable points to be explained by the candidate:**

- diabetes; soluble and insoluble NSP slow the rate of sugar absorption and reduce the likelihood of diabetes
- overweight and obesity; both types of NSP can have a satiating effect and are useful in regulating energy balance in people prone to overweight and obesity
- bowel disorders; insoluble NSP acts by binding water in the intestines, increasing the bulk of the material passing through the colon and speeds up the transit time preventing conditions such as constipation, diverticular disease and colon cancer
- heart disease; soluble NSP can help reduce blood cholesterol levels (both total and LDL) which in turn reduces risk of heart disease

All other valid points will be given credit.

[8]

8

- 7 Consider the effects on health of both a deficient and excessive intake of sodium. (AO1, AO2, AO3)

**Mark Band ([0]–[2])**

Overall impression: basic

- inadequate knowledge and understanding of sodium
- demonstrates a limited ability to apply knowledge and understanding to the question
- demonstrates a limited ability to consider the effects on health of sodium
- demonstrates a limited ability to select points relating to both deficient and excessive intakes of sodium
- quality of written communication is basic

**Mark Band ([3]–[5])**

Overall impression: competent

- reasonable knowledge and understanding of sodium
- demonstrates a good ability to apply knowledge and understanding to the question
- demonstrates a good ability to consider the effects on health of sodium
- demonstrates a good ability to select points relating to both deficient and excessive intakes of sodium
- quality of written communication is competent

**Mark Band ([6]–[8])**

Overall impression: highly competent

- clear knowledge and understanding of sodium
- demonstrates a very good ability to apply knowledge and understanding to the question
- demonstrates a very good ability to consider the effects on health of sodium
- demonstrates a very good ability to select points relating to both deficient and excessive intakes of sodium
- quality of written communication is highly competent

**Some examples of suitable points to be considered by the candidate:**

- deficient intake of sodium; can lower salt concentration of the tissue fluids resulting in fatigue, nausea, thirst is also experienced
- deficient intake of sodium; can lead to low blood pressure, dehydration and muscular cramps
- excessive intake of sodium; is linked with an increase in blood pressure (hypertension) and this increases our risk of strokes and heart attacks
- excessive intake of sodium; can cause excess fluid to be retained in the body causing oedema, particularly dangerous to young babies who cannot excrete the excess sodium
- excessive intake of sodium; is associated with an increased risk of developing stomach cancer and adverse effects on the kidney if there is some abnormality

All other valid points will be given credit.

[8]

8

- 8 Justify the current dietary advice which recommends a decrease in non-milk-extrinsic-sugars NMES. (AO1, AO2, AO3)

**Mark Band ([0]–[2])**

Overall impression: basic

- inadequate knowledge and understanding of current dietary advice in relation to NMES
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to present the rationale for decreasing NMES
- demonstrates a limited ability to justify this advice
- quality of written communication is basic

**Mark Band ([3]–[5])**

Overall impression: competent

- reasonable knowledge and understanding of current dietary advice in relation to NMES
- demonstrates a good ability to focus on advice which recommends a decrease in NMES
- demonstrates a good ability to present the rationale for decreasing NMES
- demonstrates a good ability to justify this advice
- quality of written communication is competent

**Mark Band ([6]–[8])**

Overall impression: highly competent

- clear knowledge and understanding of current dietary advice in relation to NMES
- demonstrates a very good ability to focus on advice which recommends a decrease in NMES
- demonstrates a very good ability to present the rationale for decreasing NMES
- demonstrates a very good ability to justify this advice
- quality of written communication is highly competent

**Some examples of suitable points to be justified by the candidate:**

- reduce the incidence of overweight and obesity; NMES are mainly composed of sucrose, they only provide energy which eaten in excess can contribute to overweight and obesity
- reduce the incidence of tooth decay; frequent NMES intake is linked with tooth decay caused by acids produced by oral bacteria which break down sugars in the plaque on teeth
- reduce the incidence of Type II diabetes; linked with obesity, so reduction in NMES may decrease risk

All other valid points will be given credit.

[8]

8

**Section A**

**45**

## Section B

AVAILABLE  
MARKS

(Answer **one** question from this section)

- 9 (a) Discuss the risks to health when adults regularly exceed the advised alcohol guidelines. (AO1, AO2, AO3)

### Mark Band ([0]–[3])

Overall impression: basic

- inadequate knowledge and understanding of alcohol in the diet
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to discuss the risks to health when adults regularly exceed the advised alcohol guidelines
- demonstrates a limited ability to focus on health risks for adults
- quality of written communication is basic

### Mark Band ([4]–[7])

Overall impression: competent

- reasonable knowledge and understanding of alcohol in the diet
- demonstrates a good ability to apply appropriate knowledge and understanding to the question
- demonstrates a good ability to discuss the risks to health when adults regularly exceed the advised alcohol guidelines
- demonstrates a good ability to focus on health risks for adults
- quality of written communication is competent

### Mark Band ([8]–[10])

Overall impression: highly competent

- clear analysis of knowledge and understanding of alcohol in the diet
- demonstrates a very good ability to apply appropriate knowledge and understanding to the question
- demonstrates a very good ability to discuss the risks to health when adults regularly exceed the advised alcohol guidelines
- demonstrates a very good ability to focus on health risks for adults
- quality of written communication is highly competent

**Some examples of suitable points to be discussed by the candidate:**

- damage to brain; younger members are vulnerable because the brain is still developing during their teenage years and alcohol can damage parts of the brain, affecting their ability to learn and remember
- heart disease and obesity; younger males who are consuming alcohol exceeding the benchmark can be at a higher risk of heart disease and obesity in later life
- cancer; both genders can increase the risk to mouth and throat cancer, cirrhosis of the liver can cause liver cancer, for women breast cancer can be a risk from drinking alcohol in excess
- fertility; drinking heavily can affect fertility and drinking alcohol when pregnant can seriously damage the development of the unborn baby
- interfere with nutrient absorption; heavy drinking can affect the stomach and small intestine, this can affect absorption of nutrients which can have an effect on the nutritional status of vulnerable people such as those aged 65 years and older
- mental health; alcohol is a depressant, linked to depression, anxiety and suicides

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

**(b)** Discuss the requirements for the following nutrients to achieve optimal health in adulthood: (AO1, AO2, AO3)

- fat
- calcium
- selenium.

**Mark Band ([0]–[5])**

Overall impression: basic

- inadequate knowledge and understanding of the nutritional requirements for fat, calcium and selenium
- demonstrates a limited ability to apply knowledge and understanding to the question
- demonstrates a limited ability to discuss the specific nutritional requirements for fat, calcium and selenium to achieve optimal health for this age group
- demonstrates a limited ability to focus on specific nutritional requirements for fat, calcium and selenium in adulthood
- quality of written communication is basic

**Mark Band ([6]–[10])**

Overall impression: competent

- reasonable knowledge and understanding of the nutritional requirements for fat, calcium and selenium
- demonstrates a good ability to apply knowledge and understanding to the question
- demonstrates a good ability to discuss the specific nutritional requirements for fat, calcium and selenium to achieve optimal health for this age group
- demonstrates a good ability to select specific nutritional requirements for fat, calcium and selenium in adulthood
- quality of written communication is competent

**Mark Band ([11]–[15])**

Overall impression: highly competent

- clear knowledge and understanding of the nutritional requirements for fat, calcium and selenium
- demonstrates a very good ability to apply knowledge and understanding to the question
- demonstrates a very good ability to discuss the specific nutritional requirements for fat, calcium and selenium to achieve optimal health for this age group
- demonstrates a very good ability to select specific nutritional requirements for fat, calcium and selenium in adulthood
- quality of written communication is highly competent

**Some examples of suitable points to be discussed by the candidate:****Fat**

- energy; for adults total fat intakes should provide 35% of energy requirements, of which 11% should be obtained from saturated fat, 6.5% from cis-polyunsaturated fat and 13% from cis monounsaturated and no more than 2% from trans fatty acids
- fat stores; are important for providing protection and insulation, in women body fat is needed for normal fertility
- essential fatty acids; polyunsaturated fatty acids provide EFAs, EPA is an EFA found in fish oils and is claimed to be beneficial in reducing the symptoms of arthritis and the risk of heart disease

**Calcium**

- bone health; adequate calcium intake is crucial to bone health in early adulthood, calcium intakes are important for determining peak bone mass



- deficient calcium intake; can cause lower bone mass, this increases the risk of osteoporosis in early old age, the risk is greater for adult women due to lack of the hormone oestrogen

#### Selenium

- antioxidant; this can help to give protection to cell membranes from damage by free radicals, this helps to prevent cancer and CHD, some studies have also shown an association between low blood selenium levels and heart disease risk
- body systems; selenium plays a key role in the functioning of the immune system and in thyroid hormone metabolism, and it is needed for successful reproduction

All other valid points will be given credit.

[15]

25

Or

- 10 (a)** Discuss the specific nutritional requirements in infancy. (AO1, AO2, AO3)

#### **Mark Band ([0]–[3])**

Overall impression: basic

- inadequate knowledge and understanding of specific nutritional requirements in infancy
- demonstrates a limited ability to apply knowledge and understanding to the question
- demonstrates a limited ability to discuss the specific nutritional requirements for this age group
- demonstrates a limited ability to select specific nutritional requirements for this age group
- quality of written communication is basic

#### **Mark Band ([4]–[7])**

Overall impression: competent

- reasonable knowledge and understanding of specific nutritional requirements in infancy
- demonstrates a good ability to apply knowledge and understanding to the question
- demonstrates a good ability to discuss the specific nutritional requirements for this age group
- demonstrates a good ability to select specific nutritional requirements for this age group
- quality of written communication is competent



**Mark Band ([8]–[10])**

Overall impression: highly competent

- clear knowledge and understanding of specific nutritional requirements in infancy
- demonstrates a very good ability to apply knowledge and understanding to the question
- demonstrates a very good ability to discuss the specific nutritional requirements for this age group
- demonstrates a very good ability to select specific nutritional requirements for this age group
- quality of written communication is highly competent

**Some examples of suitable points to be discussed by the candidate:**

- protein; needed to support growth, infants require more protein per unit than an adult and has a particular requirement for essential amino acids
- fats; should be an important part of an infant's diet because of their high energy density, 30-50% of an infant's energy intake should come from fat, fats also provide essential fatty acids which are important for development of the brain, vascular systems and retina in the infant
- minerals; such as calcium, phosphorus and magnesium for bone and tooth development, iron for red blood cell formation, and zinc for cell division and growth
- vitamins; A and D are required, retinol for growth, vision in dim light and tissue development, beta-carotene is needed for the maintenance of the immune system and as an anti-oxidant, vitamin K is needed for clotting of blood

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

- (b) Consider the health risks for both mother and baby of deficiencies in vital nutrients during pregnancy. (AO1, AO2, AO3)

**Mark Band ([0]–[5])**

Overall impression: basic

- inadequate knowledge and understanding of nutritional considerations during pregnancy
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to consider relevant health risks for both mother and baby
- demonstrates a limited ability to select points relating to deficiencies in vital nutrients during pregnancy
- quality of written communication is basic

**Mark Band ([6]–[10])**

Overall impression: competent

- reasonable knowledge and understanding of nutritional considerations during pregnancy
- demonstrates a good ability to apply appropriate knowledge and understanding to the question
- demonstrates a good ability to consider relevant health risks for both mother and baby
- demonstrates a good ability to select points relating to deficiencies in vital nutrients during pregnancy
- quality of written communication is competent

**Mark Band ([11]–[15])**

Overall impression: highly competent

- clear knowledge and understanding of nutritional considerations during pregnancy
- demonstrates a very good ability to apply appropriate knowledge and understanding to the question
- demonstrates a very good ability to consider relevant health risks for both mother and baby
- demonstrates a very good ability to select points relating to deficiencies in vital nutrients during pregnancy
- quality of written communication is highly competent

**Some examples of suitable points to be considered by the candidate:**

Health risks for mother

- bone health; low intake of calcium can impact on bone density
- iron deficiency anaemia; a lack of iron can lead to fatigue, nausea, loss of appetite and iron deficiency anaemia for mother
- pregnancy complications; deficiency of zinc during pregnancy has been associated with an increased risk of pregnancy complications, including intrauterine growth retardation, prolonged labour, abnormal deliveries
- high blood pressure; low intake of calcium can be linked to high blood pressure in mother

Health risks for baby

- neural tube defects; insufficient folic acid increases the risk of baby being born with neural tube defects such as spina bifida
- normal growth and development; low levels of n-3 fatty acids during pregnancy will mean low levels in the infant which can affect growth and development especially of the

- brain and retina
- rickets; low status of vitamin D during pregnancy can be related to development of rickets in children
- birth weight; deficient iron intake can affect development of the baby and likelihood of low birth weight is increased

All other valid points will be given credit.

[15]

**Section B**

**Total**

AVAILABLE  
MARKS

25

**25**

**70**

