



*Rewarding Learning*

**ADVANCED SUBSIDIARY (AS)  
General Certificate of Education  
2011**

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## **Home Economics**

**Assessment Unit AS 1**

*assessing*

**Nutrition for Optimal Health**

**[AN111]**

**WEDNESDAY 1 JUNE, AFTERNOON**

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# **MARK SCHEME**

## Section A

### AVAILABLE MARKS

1 State three sources of vitamin D (cholecalciferol) in the diet. (AO1)

- oily fish;
- butter;
- eggs.

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

3

2 What are the possible health benefits of reducing salt in the diet of older people? (AO1, AO2)

- reduces the risk of stomach cancer; salt is a causative factor in the development of this disease
- reduces blood pressure; salt correlates positively with high blood pressure which is a risk factor for developing cardiovascular disease (CVD) and strokes
- reduces risk of these diseases for older people; the risk of developing these conditions increases with age, so a reduction is important with advancing age

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

4

3 Outline the effects on health of a deficiency in vitamin B12. (AO1, AO2)

- failure of cell division particularly affecting blood cells (megaloblastic anaemia), thus producing signs and symptoms of anaemia
- people who are unable to absorb vitamin B12 from their diet suffer from pernicious anaemia
- neurological complications and degeneration of the nerve tracts in spinal cord

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

4

4 Explain the importance of indispensable amino acids. (AO1, AO2)

- these cannot be made by the body or cannot be made fast enough to meet the body's needs and therefore should be supplied by the diet
- during illness or trauma, the ability for amino acids to be synthesised may be reduced, resulting in other amino acids becoming essential during this period
- inadequate indispensable amino acids could result in stunted growth in children

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

5

## Section A

AVAILABLE  
MARKS

- 5 Consider the factors that could increase the risk of dehydration in children and adolescents. (AO1, AO2)
- physical activity; this generates body heat, which is lost through sweating, those participating in extreme sporting events need to ensure they increase their fluid intake accordingly
  - caffeine containing drinks; drinks such as cola and other so called 'energy drinks' also have the potential to act as diuretics and are not recommended as an effective source of hydration
  - sensation of thirst; this may not be recognised in younger children or it may be ignored, so as not to present an inconvenience when undertaking a physical activity

All other valid points will be given credit.

[5]

5

## Section A

AVAILABLE  
MARKS

- 6 Discuss the health implications for both mother and baby, associated with low and excessive weight gain during pregnancy. (AO1, AO2, AO3)

### Mark Band ([0]-[2])

Overall impression: basic

- inadequate knowledge and understanding of health implications associated with weight during pregnancy
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to discuss the health implications for both mother and baby
- demonstrates a limited ability to discuss the health implications relating to low and excessive weight gain
- quality of written communication is basic

### Mark Band ([3]-[5])

Overall impression: reasonable to good

- reasonable to good knowledge and understanding of health implications associated with weight during pregnancy
- demonstrates a reasonable to good ability to apply appropriate knowledge and understanding to the question
- demonstrates a reasonable to good ability to discuss the health implications for both mother and baby
- demonstrates a reasonable to good ability to discuss the health implications relating to low and excessive weight gain
- quality of written communication is reasonable to good

### Mark Band ([6]-[8])

Overall impression: very good to highly competent

- clear knowledge and understanding of health implications associated with weight during pregnancy
- demonstrates a very good to highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a very good to highly competent ability to discuss the health implications for both mother and baby
- demonstrates a very good to highly competent ability to discuss the health implications relating to low and excessive weight gain
- quality of written communication is very good to highly competent

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

low weight gain

- increased risk of low birthweight; can have consequences for the baby in later life such as higher blood pressure, insulin resistance and diabetes, and cardiovascular disease
- increased risk of infant morbidity and mortality; low life expectancy

**Section A**

**AVAILABLE  
MARKS**

excessive weight gain

- complications in labour; increased risk of prolonged labour resulting in birth injury and mortality for the baby
- increased risk of health issues for the mother; gestational diabetes, pregnancy-induced hypertension and pre-eclampsia
- increased risk of post partum diseases for the mother; overweight or obesity, Type 2 diabetes

All other valid points will be given credit.

[8]

8

Section A

AVAILABLE  
MARKS

7 Compare the nutritional value of soya and red meat in the diet. (AO1, AO2, AO3)

**Mark Band ([0]-[2])**

Overall impression: basic

- inadequate knowledge and understanding of the nutritional value of soya and red meat in the diet
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to compare the nutritional value of soya and red meat in the diet
- demonstrates a limited ability to select appropriate nutrients for comparison of soya and red meat
- quality of written communication is basic

**Mark Band ([3]-[5])**

Overall impression: reasonable to good

- reasonable to good knowledge and understanding of the nutritional value of soya and red meat in the diet
- demonstrates a reasonable to good ability to apply appropriate knowledge and understanding to the question
- demonstrates a reasonable to good ability to compare the nutritional value of soya and red meat in the diet
- demonstrates a reasonable to good ability to select appropriate nutrients for comparison of soya and red meat
- quality of written communication is reasonable to good

**Mark Band ([6]-[8])**

Overall impression: very good to highly competent

- clear knowledge and understanding of the nutritional value of soya and red meat in the diet.
- demonstrates a very good to highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a very good to highly competent ability to compare the nutritional value of soya and red meat in the diet
- demonstrates a very good to highly competent ability to select appropriate nutrients for comparison of soya and red meat
- quality of written communication is very good to highly competent

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

- protein; both red meat and soya are sources of high biological protein
- fat; the fat in red meat is predominantly saturated, whereas soya is rich in PUFA, the more beneficial fat
- iron; red meat is a good source of iron in the most available form (haem), whereas soya contains non-haem iron
- calcium; soya is a good source, whereas meat is poor
- vitamins; both contain vitamin B

All other valid points will be given credit.

[8]

8

**Section A**

**AVAILABLE  
MARKS**

**8** Explain the functions of fat as a nutrient in the body. (AO1, AO2, AO3)

**Mark Band ([0]-[2])**

Overall impression: basic

- inadequate knowledge and understanding of fat as a nutrient in the body
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to explain the functions of fat as a nutrient in the body
- demonstrates a limited ability to select appropriate functions
- quality of written communication is basic

**Mark Band ([3]-[5])**

Overall impression: reasonable to good

- reasonable to good knowledge and understanding of fat as a nutrient in the body
- demonstrates a reasonable to good ability to apply appropriate knowledge and understanding to the question
- demonstrates a reasonable to good ability to explain the functions of fat as a nutrient in the body
- demonstrates a reasonable to good ability to select appropriate functions
- quality of written communication is reasonable to good

**Mark Band ([6]-[8])**

Overall impression: very good to highly competent

- clear knowledge and understanding of fat as a nutrient in the body
- demonstrates a very good to highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a very good to highly competent ability to explain the functions of fat as a nutrient in the body
- demonstrates a very good to highly competent ability to select appropriate functions
- quality of written communication is very good to highly competent

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

- concentrated source of energy; higher than equivalent amounts of carbohydrate and protein
- fat storage; in the adipose tissue, where it provides insulation to facilitate the maintenance of body temperature and acts as a reserve of energy, and around internal organs to cushion and protect
- essential fatty acids; required for the structure and maintenance of cell membranes
- fat soluble vitamins (A, D, E and K); absorbed along with dietary fat in the small intestine

All other valid points will be given credit.

[8]

8

**Section A**

**45**

## Section B

AVAILABLE  
MARKS

- 9 (a) Evaluate the decision to breastfeed in relation to the health of mother and baby. (AO1, AO2, AO3)

### Mark Band ([0]-[3])

Overall impression: basic

- inadequate knowledge and understanding of the health benefits of breastfeeding for mother and baby
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to identify health issues in relation to breastfeeding
- demonstrates a limited ability to evaluate the decision to breastfeed in relation to the health of mother and baby
- quality of written communication is basic

### Mark Band ([4]-[7])

Overall impression: reasonable to good

- reasonable to good knowledge and understanding of the health benefits of breastfeeding for mother and baby
- demonstrates a reasonable to good ability to apply appropriate knowledge and understanding to the question
- demonstrates a reasonable to good ability to identify health issues in relation to breastfeeding
- demonstrates a reasonable to good ability to evaluate the decision to breastfeed in relation to the health of mother and baby
- quality of written communication is reasonable to good

### Mark Band ([8]-[10])

Overall impression: very good to highly competent

- clear knowledge and understanding of the health benefits of breastfeeding for mother and baby
- demonstrates a very good to highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a very good to highly competent ability to identify health issues in relation to breastfeeding
- demonstrates a very good to highly competent ability to evaluate the decision to breastfeed in relation to the health of mother and baby
- quality of written communication is very good to highly competent

### Some examples of suitable points to be evaluated by the candidate:

- physical health; breastfeeding may impact on future health of the baby, less allergic disease, lower cholesterol levels, less obesity, less risk of heart disease, it also helps the mother to restore a more healthy pre-pregnancy weight, breastfeeding is also believed to reduce the risk of breast cancer and possibly ovarian cancer, for the mother
- cognitive function; studies show a significant and positive association with breastfeeding and educational attainment
- emotional health; breastfeeding is thought to increase bonding between mother and baby, although it can be painful, stressful and tiring for some women who find breastfeeding difficult



## Section B

AVAILABLE  
MARKS

- nutrition; breastfeeding provides nutrients in the correct proportion for the baby digestion and absorption of nutrients is more efficient e.g. fat, iron, zinc, folate, B12
- immune system; breast milk contains a range of substances that aid the immunological protection of the human gut
- maternal lifestyle; human milk can contain substances which can be passed through the mother such as drugs, alcohol, nicotine and pollutants

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

(b) Examine the specific nutritional requirements in infancy. (AO1, AO2, AO3)

### Mark Band ([0]-[5])

Overall impression: basic

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

### Mark Band ([6]-[10])

Overall impression: reasonable to good

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

### Mark Band ([11]-[15])

Overall impression: very good to highly competent

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

## Section B

AVAILABLE  
MARKS

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

- energy; infants have a high basal metabolic rate (BMR) due to the large proportion of metabolically active tissue and the large loss of body heat over a relatively great surface area, the energy requirement for babies is up to four times greater than that of an adult when expressed per unit of body weight, a shortfall of energy could have serious consequences for growth
- protein; the role of protein is almost entirely to support growth, the infant requires more protein per unit body weight than the adult, and has a particular requirement for the essential amino acids histidine and taurine
- carbohydrates; this is predominantly in the form of lactose, supplying 40% of the energy in the infant's diet, lactose yields glucose and galactose on digestion, the latter is essential in the development of the brain and nervous system
- fat; should comprise 30-50% of an infant's energy intake, fats are an important part of an infant's diet due to their energy density, fats also provide omega 3 which aids the development of the baby's brain, vascular systems and retina in the early months of life
- vitamin A; this can be lacking in infants; retinol is essential for growth in children, vision in dim light and tissue development, beta carotene is needed for the maintenance of the immune system and as an antioxidant
- iron; the store present at birth is used for red blood cell formation, by six months an additional source of iron is required to produce haemoglobin in red blood cells and help prevent anaemia, a deficiency is also associated with impaired cognitive development
- calcium, magnesium and phosphorus; are needed for bone development
- zinc; essential because it helps with cell division and growth, together with other trace elements, also required for the proper functioning of the immune system and for normal growth

All other valid points will be given credit.

[15]

25

## Section B

AVAILABLE  
MARKS

- 10 (a) Consider the health risks of binge drinking for young adult women.  
(AO1, AO2, AO3)

### Mark Band ([0]-[3])

Overall impression: basic

- inadequate knowledge and understanding of the health risks of binge drinking for young adult women
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to consider the health risks of binge drinking for young adult women
- demonstrates a limited ability to select appropriate health issues
- quality of written communication is basic

### Mark Band ([4]-[7])

Overall impression: reasonable to good

- reasonable to good knowledge and understanding of the health risks of binge drinking for young adult women
- demonstrates a reasonable to good ability to apply appropriate knowledge and understanding to the question
- demonstrates a reasonable to good ability to consider the health risks of binge drinking for young adult women
- demonstrates a reasonable to good ability to select appropriate health issues
- quality of written communication is reasonable to good

### Mark Band ([8]-[10])

Overall impression: very good to highly competent

- clear knowledge and understanding of the health risks of binge drinking for young adult women
- demonstrates a very good to highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a very good to highly competent ability to consider the health risks of binge drinking for young adult women
- demonstrates a very good to highly competent ability to select appropriate health issues
- quality of written communication is very good to highly competent

## Section B

AVAILABLE  
MARKS

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

- reproductive effects; research has revealed that alcohol abuse has been associated with ovarian dysfunction resulting in amenorrhoea, the adverse reproductive consequence of excess alcohol consumption ranges from infertility to increased risk of miscarriage to impaired foetal growth and development
- risk of cancers; research shows that a female's risk of breast cancer rises with the amount of alcohol regularly consumed, research also shows that women may be more likely to develop breast cancer than non-drinkers, excessive alcohol consumption also increases the risk of several digestive tract cancers
- greater effects on women; mainly because they are smaller and have a smaller amount of a key enzyme in the stomach, making them more prone to drunkenness and serious alcohol related disease
- physical appearance; regular binge drinking can lead to weight gain, broken veins under the skins surface and blood shot eyes; it can also result in dry skin on the face due to the dehydrating effects of alcohol
- circulatory system; raised blood pressure will continue to rise the longer the binge, the heart muscle will also be weakened and breathlessness can occur after some physical exertion

All other valid points will be given credit.

[10]

- (b) Discuss the importance of iron, calcium and folate for adult women.  
(AO1, AO2, AO3)

### Mark Band ([0]-[5])

Overall impression: basic

- inadequate knowledge and understanding of iron, calcium and folate
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to discuss the importance of iron, calcium and folate for adult women
- demonstrates a limited ability to select information relating to the importance of these micronutrients for adult women
- quality of written communication is basic

### Mark Band ([6]-[10])

Overall impression: reasonable to good

- reasonable to good knowledge and understanding of iron, calcium and folate
- demonstrates a reasonable to good ability to apply appropriate knowledge and understanding to the question
- demonstrates a reasonable to good ability to discuss the importance of iron, calcium and folate for adult women
- demonstrates a reasonable to good ability to select information relating to the importance of these micronutrients for adult women
- quality of written communication is reasonable to good

**Section B**

**AVAILABLE  
MARKS**

**Mark Band ([11]-[15])**

Overall impression: very good to highly competent

- clear knowledge and understanding of iron, calcium and folate
- demonstrates a very good to highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a very good to highly competent ability to discuss the importance of iron, calcium and folate for adult women
- demonstrates a very good to highly competent ability to select information relating to the importance of these micronutrients for adult women
- quality of written communication is very good to highly competent

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

Iron

- iron deficiency anaemia; women experience anaemia much more commonly than men because the iron lost in blood during menstruation is not replaced adequately from the diet
- physical symptoms; fatigue, apathy, loss of appetite, poor temperature regulation, brittle nails

Calcium

- bone health; there is a need to ensure optimal calcium nutrition at this time of skeletal development as well as during the pre- and post-menopausal states; the decreased oestrogen production in menopausal women is associated with accelerated bone loss and osteoporosis in women after their fifth decade
- is important for women of all ages; it has been shown to help alleviate PMT symptoms, support a healthy pregnancy, and prevent osteoporosis and bone loss after menopause

Folate

- folate supplementation; there is conclusive evidence that increasing intakes of folate through supplements of folic acid, before conception and during the first twelve weeks of pregnancy, prevents the majority of neural tube defects, e.g. spina bifida in babies
- recommendations: it is recommended that all women of childbearing age, and especially those planning a pregnancy and who are in the early stages of pregnancy, take a daily supplement of 0.4mg folic acid as it is difficult to achieve this amount of additional folate by diet alone
- folate; together with vitamins B6 and B12, folate is involved with the maintenance of normal blood homocysteine levels, the amino acid homocysteine is an intermediate in folate metabolism and there is a strong body of evidence suggesting that raised blood homocysteine is an independent risk factor for heart disease and stroke

All other valid points will be given credit.

[15]

25

**Section B**

**25**

**Total**

**70**