



Rewarding Learning

**ADVANCED
General Certificate of Education
2022 RESERVE SERIES**

Health and Social Care

Assessment Unit A2 7

assessing

Human Nutrition and Health

[AHC71]

THURSDAY 30 JUNE, AFTERNOON

**MARK
SCHEME**

General Marking Instructions

Introduction

The main purpose of a 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 **GCE Health and Social Care**.

Candidates should be able to:

- AO1** Demonstrate knowledge and understanding of the specified content.
- AO2** Apply knowledge, understanding and skills to a variety of health, social care and early years contexts.
- AO3** Investigate, analyse, and evaluate acquired knowledge and understanding, present arguments, make reasoned judgements and draw conclusions.

Quality of candidates' responses

In marking the examination papers, examiners should be looking for a quality of response reflecting the level of maturity which may reasonably be expected of a 17 or 18-year-old which is 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 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 successfully selects and uses the most appropriate form and style of writing. Relevant material is organised with a high degree of clarity and coherence. There is extensive and accurate use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are of a high standard and ensure that meaning is clear.

Level 4 (Highly competent): The candidate successfully selects and uses the most appropriate form and style of writing. Relevant material is extremely well organised with the highest 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.

COVID-19 Context

Given the unprecedented circumstances presented by the COVID-19 public health crisis, senior examiners, under the instruction of CCEA awarding organisation, are required to train assistant examiners to apply the mark scheme in case of disrupted learning and lost teaching time. The interpretation and intended application of the mark scheme for this examination series will be communicated through the standardising meeting by the Chief or Principal Examiner and will be monitored through the supervision period. This paragraph will apply to examination series in 2021–2022 only.

- 1 (a) Complete the table below to identify the vitamin deficiency leading to each condition and **two** sources of each vitamin. (AO1)

Scurvy:
Vitamin C

[1]

Examples of suitable sources to be identified:

- citrus fruit, such as oranges and lemons
- peppers
- strawberries
- blackcurrants
- broccoli
- brussels sprouts
- potatoes

All other valid responses will be given credit

(2 × [1])

[2]

Night blindness:
Vitamin A

[1]

Examples of suitable sources to be identified:

- cheese
- eggs
- oily fish
- fortified low-fat spreads
- milk
- yoghurt

All other valid responses will be given credit

(2 × [1])

[2]

- (b) Describe the dietary functions of the following fat soluble vitamins. (AO1, AO2)

Examples of suitable functions to be described:

Vitamin A

- helps form and maintain healthy teeth, skeletal and soft tissue, mucus membranes, and skin
- produces the pigments in the retina of the eye
- promotes good eyesight, especially in low light

[1] basic description, [2] adequate description, [3] competent description

Vitamin E

- acts as an antioxidant, helping to protect cells from the damage caused by free radicals
- helps maintain healthy skin and eyes, and strengthen the body's natural defence against illness and infection (the immune system)

[1] basic description, [2] adequate description, [3] competent description

All other valid responses will be given credit

(2 × [3])

[6]

- (c) Summarise **three** pieces of advice to help prevent dental caries. (AO1, AO2)

Examples of appropriate advice to be summarised:

- reduce sugar in diet – limit the intake of sugar from food and drinks to no more than 24 g per day for children and 30 g per day for adults
- ensure the diet is high in calcium to help strong tooth development and protect against dental caries
- drink water with meals as this increases production of saliva, which neutralises the acid
- avoid snacking – reducing snacking reduces the production of acid in the mouth, decreasing damage to the enamel. It is recommended that if sugary foods are to be eaten in small amounts, it should be at meal times
- good oral hygiene – teeth should be thoroughly brushed twice a day and flossed to remove any build up of plaque
- visiting the dentist every six months is also recommended to maintain a good standard of oral health
- fluoride is important for the development of teeth and protection against acid damage, so using toothpaste with added fluoride is advised

All other valid responses will be given credit

[1] basic summary, [2] adequate summary, [3] competent summary

(3 × [3])

[9]

- (d) The Public Health Agency (PHA) booklet “Enjoy healthy eating” (Feb 2020) gives some advice on making healthier choices when eating out or having a takeaway.

As suggested in the booklet, discuss how “a few careful choices will ensure a treat is not a dietary disaster”. (AO1, AO2, AO3)

Examples of suitable points to be included in discussion:

- choose boiled rice rather than fried or pilau rice to reduce the overall fat content of the meal
- fried starters like samosas, pakoras and bhajis, or spring rolls will be very high in fat, so go for lower fat options like chicken tikka or chicken and sweetcorn soup instead
- creamy curries like korma or massala are also high in fat so instead choose tandoori or madras dishes or try a lentil based dish such as dahl
- battered dishes like sweet and sour chicken are another high fat choice, so opt for a stir fried main course like chow mein with an extra portion of vegetables
- order a serving of mushy peas or baked beans with fish and chips, and share a portion of chips between two
- when ordering pizza, ask for less cheese and more vegetable toppings like mushrooms, peppers, pineapple and sweetcorn

All other valid responses will be given credit

[0] is awarded for a response not worthy of credit.

Level 1 ([1]–[3])

Overall impression: basic

- basic knowledge and understanding of how a few careful choices will ensure a treat is not a dietary disaster
- demonstrates a limited ability to apply appropriate knowledge and

- understanding to the question
- demonstrates a limited ability to discuss how a few careful choices will ensure a treat is not a dietary disaster.

Level 2 ([4]–[6])

Overall impression: adequate

- adequate knowledge and understanding of how a few careful choices will ensure a treat is not a dietary disaster
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to discuss how a few careful choices will ensure a treat is not a dietary disaster.

Level 3 ([7]–[9])

Overall impression: competent

- competent knowledge and understanding of how a few careful choices will ensure a treat is not a dietary disaster
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to discuss how a few careful choices will ensure a treat is not a dietary disaster. [9]

- (e) Protein plays many vital roles in maintaining health. Analyse the dietary functions of protein. (AO1, AO2, AO3)

Examples of suitable points to be included in analysis:

- vital in the maintenance of body tissue, including development and is required for the growth and maintenance of tissues. The body's protein needs are dependent upon health and activity level
- allows key chemical reactions to take place within the body
- amino acid chains of various lengths form protein and peptides, which make up several of the body's hormones and transmit information between cells, tissues and organs
- a class of proteins known as fibrous proteins provide various parts of the body with structure, strength and elasticity
- serves as a valuable energy source but only in situations of fasting, exhaustive exercise or inadequate calorie intake
- a major element in transportation of certain molecules, for example, haemoglobin is a protein that transports oxygen throughout the body
- forms antibodies that help prevent infection, illness and disease. These proteins identify and assist in destroying antigens such as disease-causing bacteria and viruses
- acts as a buffer system, helping the body maintain proper pH values of the blood and other bodily fluids. Proteins in the blood also maintain the fluid balance between the blood and the surrounding tissues
- some proteins transport nutrients throughout the entire body, while others store them

All other valid responses will be given credit

[0] is awarded for a response not worthy of credit.

Level 1 ([1]–[4])

Overall impression: basic

- basic knowledge and understanding of the dietary functions of protein
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to analyse the dietary functions of protein
- quality of written communication is 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 intended meaning is not clear.

Level 2 ([5]–[8])

Overall impression: adequate

- adequate knowledge and understanding of the dietary functions of protein
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to analyse the dietary functions of protein
- quality of written communication is 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 ([9]–[12])

Overall impression: competent

- competent knowledge and understanding of the dietary functions of protein
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to analyse the dietary functions of protein
- quality of written communication is competent. The candidate successfully selects and uses the most appropriate form and style of writing. Relevant material is organised with a high degree of clarity and coherence. There is extensive and accurate use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are of a high standard and ensure that the meaning is clear.

Level 4 ([13]–[15])

Overall impression: highly competent

- highly competent knowledge and understanding of the dietary functions of protein
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to analyse the dietary functions of protein
- quality of written communication is highly competent. The candidate successfully selects and uses the most appropriate form and style of writing. Relevant material is extremely well organised with the highest

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.

[15]

AVAILABLE MARKS
45

- 2 (a) Describe how a person's state of health may affect their energy requirements. (AO1, AO2)

Examples of suitable points to be included in description:

- energy requirements vary depending on whether someone is healthy or ill; energy requirements may need to increase to help a person recover from an illness
- diseases are unique so too are the energy requirements needed whilst that person is ill; for example during cancer treatment the body often needs extra calories and protein to help maintain weight and heal as quickly as possible
- when people are affected by stress their appetite is affected, this may result for example in less intake of food, so their energy requirements are not met

All other valid responses will be given credit

[1] basic description, [2] adequate description, [3] competent description

(1 × [3])

[3]

- (b) Donna, aged 67, has recently been diagnosed with coronary heart disease. Assess how this physiological factor should influence her food choices. (AO1, AO2, AO3)

Examples of suitable points to be included in assessment:

- choose more fruit and vegetables for their protective qualities such as potassium, folate, vitamins and fibre – aim to eat at least five portions of fruit and vegetables each day. These can be fresh, frozen, dried or tinned
- choose more starchy foods such as wholegrain bread, pasta and rice to increase fibre intake, which will aid the removal of cholesterol from the body
- avoid food containing saturated fats, because these will increase the levels of bad cholesterol in the blood. Foods high in saturated fat include:
 - meat pies
 - sausages and fatty cuts of meat
 - butter
 - ghee – a type of butter often used in Indian cooking
 - lard
 - cream
 - hard cheese
 - cakes and biscuits
 - foods that contain coconut or palm oil
- choose foods low in fat (or higher in unsaturated fat) as the omega-3 in these foods may reduce the risk of heart attacks. Foods high in unsaturated fat include:
 - oily fish
 - avocados
 - nuts and seeds
 - sunflower, rapeseed, olive and vegetable oils
- choose to drink less alcohol as too much alcohol can damage the heart muscle, increase blood pressure and may also lead to weight gain, all of which are contributing factors of coronary heart disease
- limit the amount of salt to no more than 6 g (0.2 oz) a day as too much

- salt will increase blood pressure. 6 g of salt is about 1 teaspoonful
- try to avoid too much sugar in the diet, as this can increase the chances of developing diabetes, which is proven to significantly increase chances of developing CHD

All other valid responses will be given credit

[0] is awarded for a response not worthy of credit.

Level 1 ([1]–[4])

Overall impression: basic

- basic knowledge and understanding of how the physiological factor of having coronary heart disease should influence Donna's food choices
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to assess how the physiological factor of having coronary heart disease should influence Donna's food choices
- quality of written communication is 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 intended meaning is not clear.

Level 2 ([5]–[8])

Overall impression: adequate

- adequate knowledge and understanding of how the physiological factor of having coronary heart disease should influence Donna's food choices
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to assess how the physiological factor of having coronary heart disease should influence Donna's food choices
- quality of written communication is 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 ([9]–[12])

Overall impression: competent

- competent knowledge and understanding of how the physiological factor of having coronary heart disease should influence Donna's food choices
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to assess how the physiological factor of having coronary heart disease should influence Donna's food choices
- quality of written communication is competent. The candidate successfully selects and uses the most appropriate form and style of writing. Relevant material is organised with a high degree of clarity and coherence. There is extensive and accurate use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are of a high standard and ensure that meaning is clear. [12]

- (c) Food poisoning is an illness caused by eating contaminated food. It's not usually serious and most people get better within a few days without treatment. Using the headings cooking, chilling and cross contamination, analyse safe practices when storing and preparing food. (AO1, AO2, AO3)

Cooking

Examples of suitable points to be included in analysis:

- ensure that all foods are cooked properly and are heated for a long enough time at a high enough temperature and check by using a clean food thermometer where appropriate to ensure that foods are cooked to the correct requirements, whilst eliminating the possibility of under- or overcooked food. Cooking food properly kills most of the harmful bacteria which can cause food poisoning. Food should be cooked or reheated until it is steaming hot (with a core temperature of at least 70°C for cooked food and 75°C for reheated food)
- hot food must be served piping hot, that is above 63°C. Bacteria will begin to die when the temperature rises above 60°C
- meats, such as burgers or sausages, should always be cooked until the juices run clear and they are no longer pink on the inside
- always pre-heat the oven before cooking and follow the cooking times on labels or in recipes
- large joints of meat need special care to ensure that the centre is properly cooked. A meat thermometer can help make sure that the correct temperature has been reached
- frozen meat must be thawed all the way through before cooking
- food that is cooked for eating later should be cooled as quickly as possible (ideally within 90 minutes) and then stored in the fridge above raw foods until use

Chilling

Examples of suitable points to be included in analysis:

- reducing the temperature below 5°C slows the reproduction of micro-organisms helping to reduce the risk of food poisoning. Specific types of food are best stored in a refrigerator, because at room temperature pathogenic bacteria can double in quantity every 30 to 40 minutes, increasing the chances of developing an illness; fridges should be set at 4°C
- food should be stored:
 - top shelf: dairy products
 - next shelf: cooked meats
 - next shelf: raw meats (covered to prevent drips)
 - bottom drawer: salad and vegetables
- foods should be covered and ideally labelled
- uneaten foods should not be stored in their cans when chilling as this can lead to contamination of the food
- a fridge should not be too full as air needs to circulate in order to keep the food cold
- do not put hot food straight into the fridge as it will raise the temperature, potentially causing bacterial multiplication in other foods
- empty and clean out the fridge regularly

- ensure the freezer is working at a temperature below -18°C
- do not place hot foods in the freezer or leave the door open for extended periods
- do not overload the freezer as cold air needs to circulate around the food
- label chilled food showing the contents and the date and wrap well or cover to prevent it drying out. Only freeze food when it is in its best condition, to allow the food to last longer
- never refreeze defrosted food, as this increases the growth of bacteria
- foods should never be thawed at room temperature and instead should be defrosted in the fridge

Cross contamination

Examples of suitable points to be included in analysis:

- separate raw meat, poultry and seafood from other foods when shopping and storing food
- use separate cutting boards and knives for raw meat products and fresh fruit and vegetables
- pets and pests should be kept away from food and food preparation areas
- washing cutting boards, dishes and utensils thoroughly with hot soapy water will help reduce cross-contamination. This includes washing plates so that when cooked food is put on them, they don't become contaminated with previous bacteria
- hands should always be washed after handling raw food, handling rubbish or waste food and going to the toilet
- roll long sleeves up and wear a clean apron to stop bacteria from being transferred from clothes to the food
- remove any jewellery that might harbour dirt and bacteria
- different utensils should be used for raw and ready-to-eat food, or washed in between preparing different types of food
- use a clean spoon when tasting food, rather than fingers
- ensure raw meat is covered and stored separately on the lowest shelf of the refrigerator to prevent drips onto other food
- do not use sauce that was used to marinate raw foods, unless it is boiled beforehand

All other valid responses will be given credit

[0] is awarded for a response not worthy of credit.

Level 1 ([1]–[5])

Overall impression: basic

- basic knowledge and understanding of safe practices when storing and preparing food
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to analyse safe practices when storing and preparing food
- quality of written communication is 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 intended meaning is not clear.

Level 2 ([6]–[10])

Overall impression: adequate

- adequate knowledge and understanding of safe practices when storing and preparing food
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to analyse safe practices when storing and preparing food
- quality of written communication is 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 ([11]–[15])

Overall impression: competent

- competent knowledge and understanding of safe practices when storing and preparing food
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question, for all three aspects – cooking, chilling and cross contamination
- demonstrates a competent ability to analyse safe practices when storing and preparing food
- quality of written communication is competent. The candidate successfully selects and uses the most appropriate form and style of writing. Relevant material is organised with a high degree of clarity and coherence. There is extensive and accurate use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are of a high standard and ensure that meaning is clear. [15]

- (d) Consider how a vegan diet can meet the nutritional requirements for calcium, iron and vitamin B12.

(AO1, AO2, AO3)

Examples of suitable points to be included:**Calcium**

Good sources of calcium for vegans include:

- almonds
- sesame seeds and tahini
- pulses – peas, beans and lentils
- green, leafy vegetables – such as broccoli, cabbage and okra, but not spinach (spinach does contain high levels of calcium but the body cannot digest it all)
- fortified unsweetened soya, rice and oat drinks
- calcium-set tofu
- brown (wholemeal) and white bread (in the UK, calcium is added to white and brown flour by law)
- dried fruit, such as raisins, prunes, figs and dried apricots

Iron

Good sources of iron for vegans include:

- pulses, such as beans, lentils and peas
- nuts

- dried fruit, such as raisins, apricots, prunes and figs
- dark-green leafy vegetables, such as watercress, broccoli and spring greens
- wholegrains, such as brown rice and brown bread
- wholemeal bread and flour
- breakfast cereals fortified with iron
- cacao powder
- curry powder

Vitamin B12

Good sources of vitamin B12 for vegans include:

- yeast extract, such as Marmite, which is fortified with vitamin B12
- breakfast cereals fortified with vitamin B12
- unsweetened soya drinks fortified with vitamin B12

All other valid responses will be given credit

[0] is awarded for a response not worthy of credit.

Level 1 ([1]–[3])

Overall impression: basic

- basic knowledge and understanding of how a vegan diet can meet the nutritional requirements for calcium, iron and vitamin B12
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to consider how a vegan diet can meet the nutritional requirements for calcium, iron and vitamin B12.

Level 2 ([4]–[6])

Overall impression: adequate

- adequate knowledge and understanding of how a vegan diet can meet the nutritional requirements for calcium, iron and vitamin B12
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to consider how a vegan diet can meet the nutritional requirements for calcium, iron and vitamin B12.

Level 3 ([7]–[9])

Overall impression: competent

- competent knowledge and understanding of how a vegan diet can meet the nutritional requirements for calcium, iron and vitamin B12
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to consider how a vegan diet can meet the nutritional requirements for calcium, iron and vitamin B12. [9]

- 3 (a) Explain **three** reasons water and fluid intake is important for infants. (AO1, AO2)

Examples of suitable reasons to be explained:

- aids an infant's digestion – helping to reduce the risk of constipation
- replenishes their fluid stores after activity (especially if playing outdoors or in the hotter months)
- helps infants maintain a steady body temperature
- lubricates joints, and protects body tissues for infants
- helps prevent dehydration and rehydrates after illness

All other valid responses will be given credit

[1] basic explanation, [2] competent explanation

(3 × [2])

[6]

- (b) Examine why adolescents need protein, iron and calcium in their diet. (AO1, AO2, AO3)

Examples of suitable points to be included in examination:

- protein is required to carry out the following functions: growth – protein is needed during the growth spurt (in general, males will need higher amounts than females due to their larger muscle mass). Repair and maintenance of body cells and tissues (as adolescents are a very active age group). Energy – protein can be used as a secondary source of energy to meet the high demands during this stage of life
- iron needed for growth, muscle development and healthy blood – teenagers often don't have enough iron in their diet; this is particularly true for teenage girls, who often cut out red meat from their diet due to vegetarianism or concerns over weight management and fat intake. After menstruation begins, girls need more iron than boys to replace what is lost
- calcium: the stage in life when bones are at their strongest is termed peak bone mass. This must be achieved during adolescence. Calcium is essential to reach this target. Achieving peak bone mass will help to reduce the risk of osteoporosis in later life. Calcium and vitamin D work together to increase calcium absorption. Vitamin D works with calcium to make bones stronger; as many as 1 in 5 teenagers are deficient in vitamin D

All other valid responses will be given credit

[0] is awarded for a response not worthy of credit.

Level 1 ([1]–[3])

Overall impression: basic

- basic knowledge and understanding of why adolescents need protein, iron and calcium in their diet
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to examine why adolescents need protein, iron and calcium in their diet.

Level 2 ([4]–[6])

Overall impression: adequate

- adequate knowledge and understanding of why adolescents need protein,

- iron and calcium in their diet
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to examine why adolescents need protein, iron and calcium in their diet.

Level 3 ([7]–[9])

Overall impression: competent

- competent knowledge and understanding of why adolescents need protein, iron and calcium in their diet
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to examine why adolescents need protein, iron and calcium in their diet. [9]

(c) Complete the table below to identify **one** way each ingredient in a recipe may be modified to meet current dietary advice. (AO1)

Ingredient	Example of one way to modify this ingredient to meet current dietary advice
200 g white pasta	<ul style="list-style-type: none"> wholewheat pasta courgette noodles brown rice pasta soba noodles spaghetti squash
250 mls full fat milk	<ul style="list-style-type: none"> semi skimmed milk skimmed milk oat milk soy milk coconut milk almond milk rice milk
500 g ground beef/ minced beef (12% fat)	<ul style="list-style-type: none"> 500 g 5% ground/minced beef 250 g 5% beef and 250 g of chickpeas substitute lentils for ground beef tofu beans mushrooms textured soy/vegetable protein (TSP), (TVP)

All other valid responses will be given credit

(3 × [1])

[3]

(d) Analyse the dietary risk factors and appropriate advice to help prevent bowel cancer. (AO1, AO2, AO3)

Dietary risk factors:

Examples of suitable points to be included in analysis:

- many studies have shown that eating lots of red and processed meat increases the risk of bowel cancer. It is estimated that around 18% of bowel cancer cases in the UK are linked to eating these meats

- not eating enough foods containing fibre. Eating too little fibre causes around 30% of bowel cancer cases in the UK. Fibre keeps everything moving easily through the digestive system, adds bulk to waste and makes it easier to travel through the bowel
- drinking alcohol may make it easier for other dietary or environmental cancer-causing compounds, such as those in tobacco smoke, to get into the cells and cause DNA damage. When alcohol is broken down in the body, compounds are formed that can directly damage the DNA, which can then lead to a range of cancers including bowel cancer

Appropriate advice to help prevent bowel cancer:

Examples of suitable points to be included in analysis:

- limit how much red meat eaten and avoid processed meats as much as possible. The government recommends that people eating more than 90 g of red and processed meat a day should reduce it to 70 g or less
- swap red meat for chicken or fish
- use beans and pulses in meals instead of meat
- avoid processed meats such as bacon, ham, sausages and salami as much as possible as these are preserved by smoking, curing, salting or by adding preservatives such as nitrates
- eat more fibre rich foods to reduce the risk of bowel cancer – boost the fibre in the diet by choosing wholegrain versions of foods. To get more fibre in the diet try:
 - swapping to brown rice, pasta or bread
 - swapping snacks to low calorie popcorn rather than crisps
 - choosing wholegrain breakfast cereals
 - eating more fruit and vegetables high in fibre, such as peas and raspberries
- eating more vegetables and fruit may also help to protect against bowel cancer because they contain antioxidants which help to delay or prevent cell damage. Try to eat at least five portions of vegetables and fruit every day
- drink about 1.6 to 2 litres (6–8 glasses) of fluid every day to prevent dehydration. Water and low fat milk are great choices. Avoid sugary drinks such as cola, lemonade, fruit squash with added sugar and fruit juices (one small glass of fruit juice per day is enough). Fibre and water are a great combination for good bowel health
- when choosing to drink alcohol, follow national guidelines. In the UK, the guideline is to drink no more than 14 units a week, spread over at least three days for both men and women
- keep a healthy weight by eating a healthy, balanced diet. Obesity is a cause of bowel cancer. It is estimated that 11% of bowel cancers in the UK are linked to being overweight or obese. The risk of bowel cancer is higher in people who are obese compared to those who have a healthy BMI
- be more physically active to have a lower risk of bowel cancer as exercise increases antioxidant levels and DNA repair
- stop smoking: 7% of bowel cancers in the UK are linked to smoking. The risk increases with the number of cigarettes smoked per day. It is never too late to stop smoking, but the sooner the better

All other valid responses will be given credit

[0] is awarded for a response not worthy of credit.

Level 1 ([1]–[5])

Overall impression: basic

- basic knowledge and understanding of the dietary risk factors and appropriate advice to help prevent bowel cancer
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to analyse the dietary risk factors and appropriate advice to help prevent bowel cancer
- quality of written communication is 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 intended meaning is not clear.

Level 2 ([6]–[10])

Overall impression: adequate

- adequate knowledge and understanding of the dietary risk factors and appropriate advice to help prevent bowel cancer
- demonstrates an adequate ability to apply appropriate knowledge and understanding to the question
- demonstrates an adequate ability to analyse the dietary risk factors and appropriate advice to help prevent bowel cancer
- quality of written communication is 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 ([11]–[14])

Overall impression: competent

- competent knowledge and understanding of the dietary risk factors and appropriate advice to help prevent bowel cancer
- demonstrates a competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a competent ability to analyse the dietary risk factors and appropriate advice to help prevent bowel cancer
- quality of written communication is competent. The candidate successfully selects and uses the most appropriate form and style of writing. Relevant material is organised with a high degree of clarity and coherence. There is extensive and accurate use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are of a high standard and ensure that meaning is clear.

Level 4 ([15]–[18])

Overall impression: highly competent

- highly competent knowledge and understanding of the dietary risk factors and appropriate advice to help prevent bowel cancer
- demonstrates a highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a highly competent ability to analyse the dietary risk

- factors and appropriate advice to help prevent bowel cancer
 quality of written communication is highly competent. The candidate
 successfully selects and uses the most appropriate form and style of
 writing. Relevant material is extremely well organised with the highest
 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.

[18]

Total

**AVAILABLE
MARKS**

36

120