

1. The relationship between diet and health

- 1) Dietary guidelines state eight tips for healthy eating.
i) Describe how the following tips support healthy eating.
a) Eat lots of fruit and vegetables.

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- b) Eat more fish.

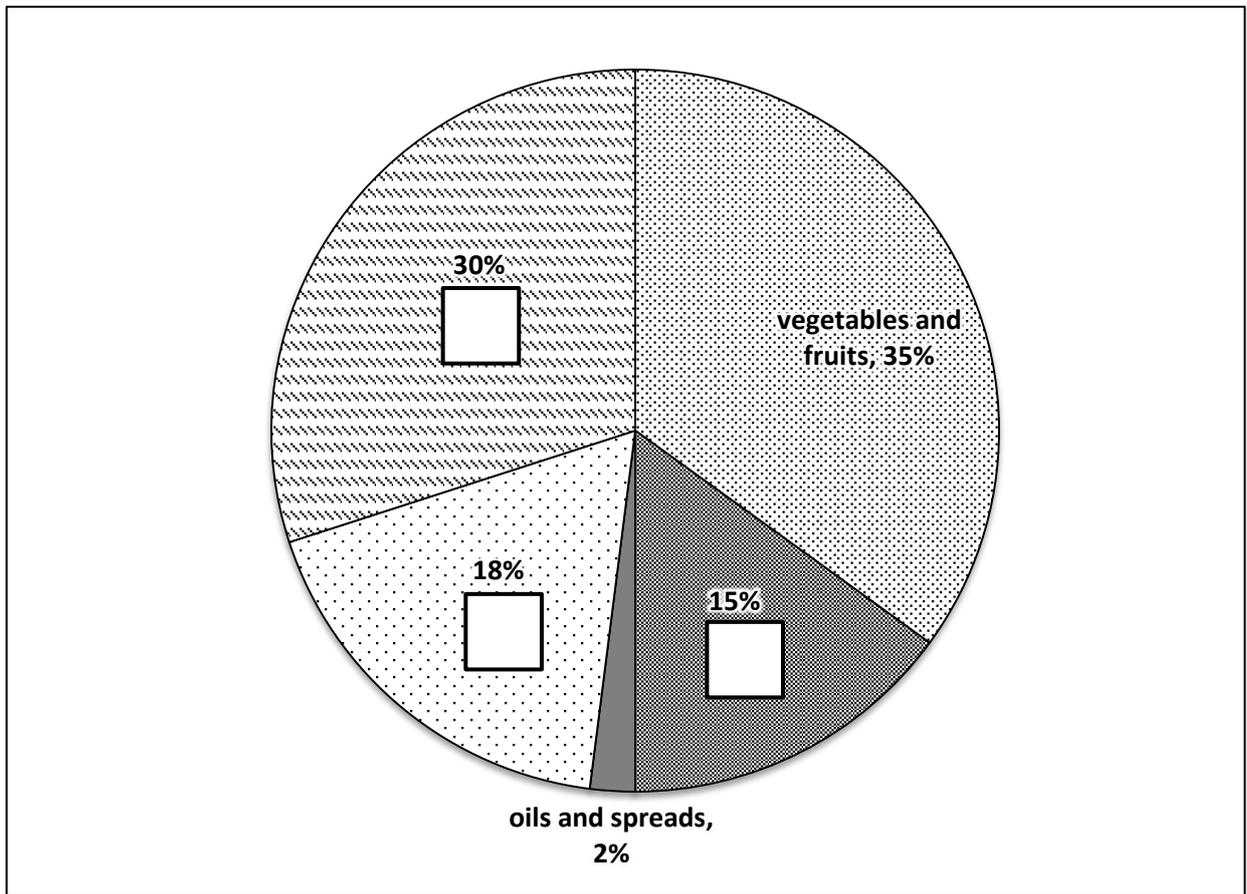
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- c) Drink plenty of water.

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- ii) The Eatwell Guide is a pictorial representation of the proportions of different foods required in the diet. Complete the diagram below to illustrate how major commodity groups contribute to a healthy balanced diet.



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|---|--|---------------------------|
| A. Potatoes, bread, rice, pasta and other starchy foods | B. Meat, fish, pulses and other protein-rich foods | C. Dairy and alternatives |
|---|--|---------------------------|

2) Explain what the relationship is between diet, nutrition and health. Use the keywords below to help.

quantity micronutrients macronutrients deficiency excess balanced

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3) Sugar consumption in the United Kingdom has been growing rapidly since the end of nineteenth century.

i) From the options below, tick which health conditions may be caused by high sugar intake.

obesity	<input type="checkbox"/>	osteoporosis	<input type="checkbox"/>	anaemia	<input type="checkbox"/>	tooth decay	<input type="checkbox"/>
coronary heart disease	<input type="checkbox"/>	type 2 diabetes	<input type="checkbox"/>	overweight	<input type="checkbox"/>	diverticulitis	<input type="checkbox"/>

ii) Give an example of one action that might help lower sugar intake of an individual.

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4) Colour-code the diseases with their dietary causes, outcomes, and potential dietary and lifestyle changes that have to be made. Note that some of the options can be used multiple times.

Diseases			
Osteoporosis	Coronary heart disease	Type 2 diabetes	Anaemia
Dietary causes			
Lack of iron	Too much saturated fat	Overeating	Lack of vitamin D
Excess of phosphorus	Low physical activity	Folic acid deficiency	Too little calcium
Too much sugar	Too much fat		
Health outcomes			
Heart failure	Limb amputation	Tiredness	Kidney failure
Brittle bones	Tooth loss	Trouble during childbirth	Chest pain
Blindness	Joint and spine problems	Easy bone fractures	
Changes in diet and lifestyle			
Eat more fish	Cut down on sugar	Cut down on fats	Consume more vitamin D
Lose weight (reduce energy intake)	Cut down on saturated fats	Drink more milk	Increase physical activity
Eat more vitamin C	Eat liver	Eat regularly	

5) From the list below, choose products that will be suitable for:

A 70-year-old man
suffering from obesity

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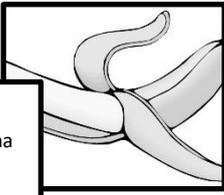
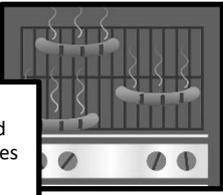
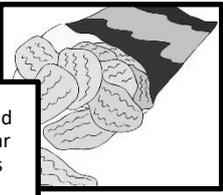
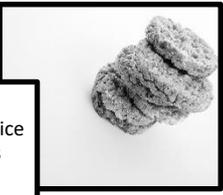
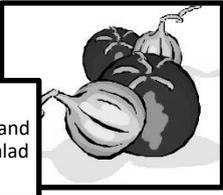
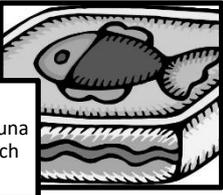
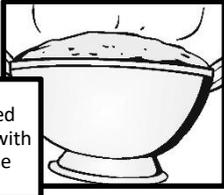
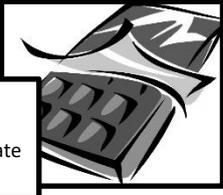
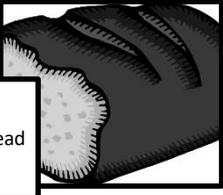
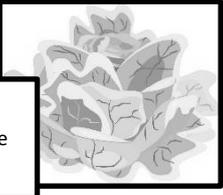
A 50-year-old woman
suffering from high
blood pressure

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A 14-year-old girl
suffering from bad
tooth decay

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Product list:

 banana	 grilled sausages	 salt and vinegar crisps	 brown rice cakes
 fudge	 tomato and onion salad	 tinned tuna sandwich	 apple pie
 mashed potato with cheese	 dark chocolate	 corn bread	 lettuce

6) Jim is a 55-year-old man suffering from diabetes and obesity. He's having fried sausages, deep-fried chips with mayonnaise and half a bar of milk chocolate for lunch. Consider whether the meal is suitable for him. How would you adapt the cooking methods and/or ingredients to make it more appropriate?

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7) Diverticulitis is a disease in which small pockets of the large intestine become inflamed. Explain why eating a high-fibre diet may help to alleviate the symptoms of diverticulitis.

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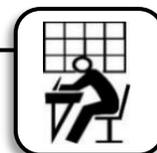
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Exam-style Question

Childhood obesity rates in the UK are growing rapidly. Suggest **four** ways of reducing the rates of obesity of the population.



(4 marks)

Extension Task

Design a poster in which you explain how diet affects a person's health. In your poster:

- Identify a diet-related condition from: diabetes, obesity, cardiovascular disease, tooth decay, bone health (osteoporosis), diverticulitis
- Indicate causes of the condition/disease (those related and unrelated to diet)
- Identify symptoms of the condition/disease
- Point out potential outcomes and health effects
- Explain how a person can change their diet to improve the situation

1. The relationship between diet and health

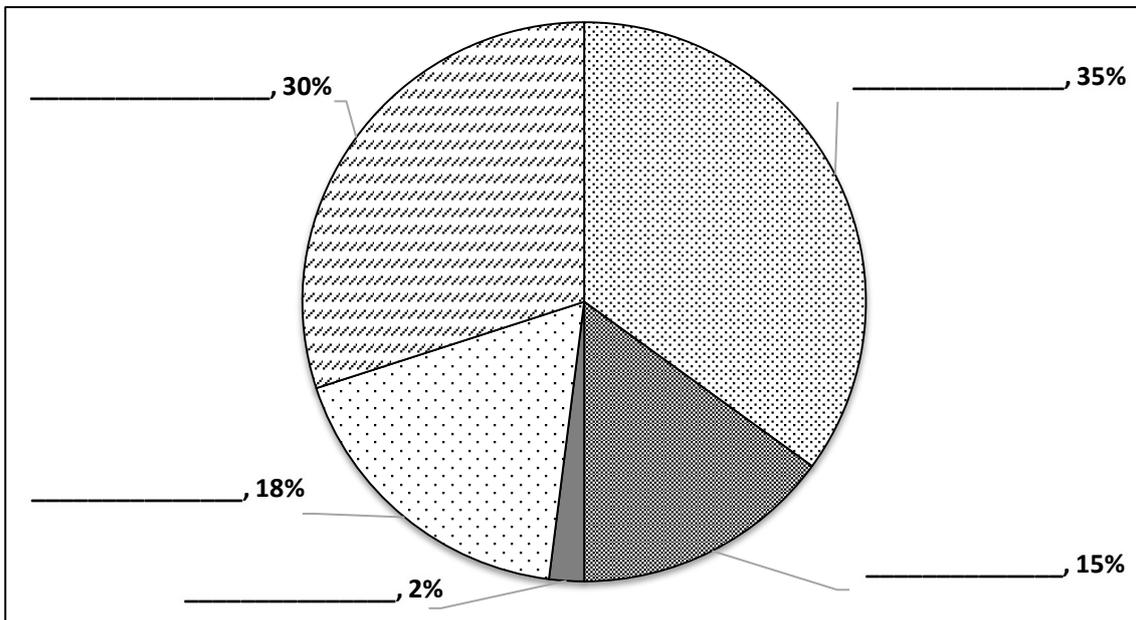


1) Dietary guidelines state eight tips for healthy eating.

i) List three of the eight tips for healthy eating and describe how each supports good health.

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- b)
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- c)
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ii) The Eatwell Guide is a pictorial representation of the proportions of different foods required in the diet. Complete the diagram below to illustrate how major commodity groups contribute to a healthy balanced diet



2) Explain the relationship between diet, nutrition and health.

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3) Sugar consumption in the United Kingdom has increased by nearly 700% since the end of the nineteenth century – from 8 kg per person in 1840 to 55 kg per person in 1980.

i) List three health conditions that might be caused by high sugar intake.

- 1.
- 2.
- 3.

ii) Give one example of an action that the government could take to help lower sugar intake of the UK population.

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4) Complete the table to indicate dietary causes, outcomes, and dietary and lifestyle changes that have to be made to improve the health of individuals suffering from the given conditions.

Health condition	Cause	Symptoms and outcomes	Dietary and lifestyle changes
Osteoporosis			
Coronary heart disease			
Type 2 diabetes			
Anaemia			

5) List at least three products that should be avoided in the given health conditions.

A 70-year-old man
suffering from obesity

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A 50-year-old woman
suffering from
hypertension

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A 14-year-old girl
suffering from bad
tooth decay

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6) Jim is a 55-year-old man suffering from diabetes and obesity. Design a lunch meal which would be appropriate for his conditions, taking into consideration cooking methods and choice of ingredients. Justify your choices.

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7) Diverticulitis is a disease in which small pockets of the large intestine become inflamed. Evaluate the importance of diet in the prevention and treatment of diverticulitis.

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Exam-style Question



An unhealthy diet has caused an increase in the number of related health conditions. Assess the relationship between diet, nutrition and health and the impact this could have on the economy and wider society.

(8 marks)

Extension Task

Plan a daily diet for the following individuals in order to improve their health conditions and justify your meal choices.

- 1) A teenage girl suffering from obesity
- 2) A 70-year-old man suffering from osteoporosis and type 2 diabetes

Answers

1. The relationship between diet and health

- 1) ●■ Higher ability to provide any three of the below
- **Base your meals on starchy foods**
 - they are the main source of energy
 - provide complex carbohydrates (starch) and dietary fibre (e.g. to support bowel movements, slow down absorption of sugar in the intestine, prevent constipation)
 - they provide a range of vitamins and minerals (such as calcium, which supports bone health, vitamin B1 to prevent beriberi, and iron to prevent anaemia)
 - they ensure a feeling of satiety for a long time, helping to maintain a healthy body weight
 - a) ●■ **Eat lots of fruit and vegetables**
 - fruit and vegetables are sources of minerals (e.g. potassium, which lowers blood pressure, magnesium, which supports muscle performance, iron to prevent anaemia and support blood health)
 - they are sources of vitamins (e.g. beta carotene to support proper vision, vitamin C to boost immunity)
 - they provide water (to prevent dehydration and ensure proper functioning of all cells in the body)
 - they provide antioxidants (to prevent diseases caused by free radicals, e.g. cancer, and to slow down ageing)
 - they provide dietary fibre which gives the feeling of satiety for a long time and slows down absorption of sugar from the fruit, preventing type 2 diabetes and obesity
 - b) ●■ **Eat more fish**
 - fish is a source of whole (HBV) protein necessary for growth and development of cells and tissues
 - it is a source of vitamins (e.g. vitamin D to support bone health)
 - it is a source of minerals (e.g. iodine to prevent thyroid dysfunction, calcium to support bone health, iron to prevent anaemia)
 - oily fish provide omega-3 fatty acids, necessary for the proper development and functioning of the brain
 - **Cut down on saturated fat and sugar**
 - to lower blood cholesterol level and prevent cardiovascular disease
 - to lower the risk of tooth decay
 - to lower the risk of obesity and related diseases, such as type 2 diabetes
 - **Try to eat less salt**
 - to reduce sodium intake and decrease the risk of hypertension
 - to lower the risk of heart attack and stroke
 - **Get active and try to be a healthy weight**
 - physical activity helps a person to burn surplus calories, stay fit and maintain a healthy body weight
 - lack of physical activity can increase a person's risk of becoming overweight or obese, and result in diseases such as type 2 diabetes and cardiovascular disease
 - c) ●■ **Drink more water**
 - to prevent dehydration and heat stroke
 - to ensure proper bowel movements
 - to maintain correct body temperature
 - to maintain a healthy body weight
 - **Don't skip breakfast**
 - to boost metabolism
 - to maintain a healthy body weight
 - to support proper functioning of the brain
 - to improve learning and memory
 - ii) The Eatwell Guide states that:
 - 35% of daily intake should be made up of vegetables and fruits
 - 30% of it should be wholegrains and starchy foods●
 - 18% is meat and other protein-rich foods●
 - 15% is dairy and alternatives●
 - 2% is fats

- 2) ●■ Higher ability to provide similar answer to lower-ability worksheet
A **balanced** diet should provide **macronutrients** and **micronutrients** in correct **quantities**. Both **excessive** and insufficient intake of macro- and micronutrients is negative and causes health issues. A balanced diet provides proper amounts of nutrients and, therefore, helps to maintain health. (Or any other relevant answer.)
- 3) ● i) Tooth decay, obesity, overweight, type 2 diabetes
ii) Exchange sugary drinks for spring water; eat fewer sweets; cook from scratch instead of buying ready-to-use foods
- 3) ■ i) Tooth decay, obesity, overweight, type 2 diabetes
ii) • increase taxes on sugary drinks and snacks
• promote water and natural unsweetened juices instead of sugary drinks
• promote and grant manufacturers that don't sweeten their products
- 4) ●■ Higher ability to provide similar answer to lower-ability worksheet

Diseases			
Osteoporosis	Coronary heart disease	Type 2 diabetes	Anaemia
Dietary causes			
Lack of vitamin D	Too much saturated fat	Too much saturated fat	Lack of iron
Excess of phosphorus	Overeating	Overeating	Folic acid deficiency
Too little calcium	Low physical activity	Low physical activity	
Low physical activity	Too much sugar	Too much sugar	
	Too much fat	Too much fat	
Health outcomes			
Brittle bones	Heart failure	Limb amputation	Heart failure
Tooth loss	Chest pain	Kidney failure	Tiredness
Joint and spine problems		Blindness	Trouble during childbirth
Easy bone fractures			
Changes in diet and lifestyle			
Eat more fish	Cut down on sugar	Cut down on sugar	Eat more vitamin C
Consume more vitamin D	Cut down on fats	Cut down on fats	Eat liver
Drink more milk	Lose weight (reduce energy intake)	Lose weight (reduce energy intake)	
Increase physical activity	Cut down on saturated fats	Cut down on saturated fats	
	Increase physical activity	Increase physical activity	
		Eat regularly	

- 5) ●
- 70-year-old obese man: banana, brown rice cakes, tomato and onion salad, tinned tuna sandwich, corn bread, lettuce
 - 50-year-old woman with hypertension: banana, brown rice cakes, tomato and onion salad, dark chocolate, corn bread, lettuce
 - 14-year-old girl with bad tooth decay: grilled sausage, salt and vinegar crisps, brown rice cakes, tomato and onion salad, mashed potato with cheese, corn bread, lettuce
- 5) ■
- 70-year-old obese man should avoid: sweets, sweetened beverages, high-sugar products, high-fat products, fast foods
 - 50-year-old woman with hypertension should avoid: salt, salty snacks, salty sausages and meats, cheese
 - 14-year old-girl with bad tooth decay should avoid: sweets, chocolate, sugar, sweetened beverages, fruit and fruit juices (because of high content of fructose)
- Or any other suitable answer.
- 6) ●
- Frying and deep-frying increases the amount of fat in the food, which is not suitable for an obese person. Frying and deep-frying should be replaced with other cooking methods, e.g. like boiling, roasting, baking or grilling.
 - Milk chocolate is not suitable because of high amount of sugar, not suitable for diabetics. It is better to replace it with fresh fruit or a piece of dark chocolate.

- 6) ■ Students must apply their knowledge of healthy eating and cooking methods to select and justify lunch items which will be suitable for a person suffering from diabetes and obesity.
- Exemplary meal would include a source of polysaccharides (e.g. wholegrain bread or brown rice), dietary fibre (e.g. vegetables, preferably raw), source of unsaturated fats (e.g. olive oil) and source of HBV proteins (lean meat or soy) or two sources of LBV proteins complementing each other.
 - The ingredients should be described in detail, i.e. 'wholegrain rye bread' instead of just 'bread'
 - Some cooking techniques should be indicated, such as steaming, dry frying, stir-frying or boiling, as those which produce low fat, healthier meals than other cooking methods.
- 7) ● Students must provide at least one of the following answers:
- dietary fibre improves bowel movements, helping to remove waste products and rid the intestines of harmful substances and pathogenic bacteria which could cause inflammation
 - dietary fibre acts as a prebiotic, supporting the growth of probiotic bacteria (which in effect help to fight off pathogens which cause inflammation)
 - dietary fibre helps to remove the waste products, which, therefore, will not be filling the diverticula (pouches) in the intestines
- 7) ■ The answer includes a reference to:
- diverticulitis develops when food waste / waste products lie in the diverticula (pouches) in the intestines
 - pathogenic bacteria and fungi can thrive on these waste products, leading to inflammation of the intestine
 - a healthy diet can prevent the disease and help to treat it
 - people who eat little dietary fibre are at a higher risk of developing diverticulitis than those who eat the correct amount of dietary fibre
 - this is because fibre stimulates bowel movements, helping to remove the waste products and preventing them from lying in the pouches in the intestine
 - this is also because fibre acts as a prebiotic, supporting the growth of probiotic bacteria (which, in effect, help to fight off pathogens which cause inflammation)
 - it might also be helpful to reduce the amount of sugar in the diet, as sugar provides perfect conditions for the growth of fungi in the intestines
 - a healthy diet can also help to alleviate symptoms of the disease; for example, by providing probiotic bacteria (e.g. from yoghurt) which might help to inhibit growth and development of pathogens in the diverticula
- Or any other suitable answer.

Exam-style Question

- 1) ● (4 marks)
- Any four from:
- promote physical activity among children
 - introduce a sugar tax / lower the amount of sugar in foods commonly eaten by children, such as breakfast cereals, fruit beverages, yoghurts, sugary snacks
 - lower the amount of saturated fats in foods commonly eaten by children, such as crisps
 - plan school meals so that they reflect the current dietary guidelines
 - teach children and their parents how to make a healthy breakfast/lunch/dinner
 - promote healthy snacks such as fresh fruit rather than crisps or chocolate bars
 - remove vending machines with sweets from schools
 - give the children whole fresh fruit rather than fruit juices / limit the amount of fruit juice drunk
- Or any other suitable answer.

1) ■ (8 marks)

<p>Response shows excellent understanding of nutrition and health, and detailed knowledge of eating patterns in the United Kingdom.</p> <p>Response shows thorough analysis, explanation and assessment of the relationship between diet and health, and the impact a poor diet can have on the wider society and the economy.</p> <p>Student gives a well-balanced rationale with relevant and validated information.</p>	<p>Band 3 8–12 marks</p>
<p>Response shows good understanding of nutrition and health, and accurate knowledge of eating patterns in the United Kingdom.</p> <p>Response shows good analysis, explanation and assessment of the relationship between diet and health, and the impact a poor diet can have on the wider society and the economy.</p> <p>There is a line of reasoning presented with some structure which is, for the most part, relevant.</p>	<p>Band 2 4–7 marks</p>
<p>Response shows limited understanding of nutrition and health, and some basic knowledge of eating patterns in the United Kingdom.</p> <p>There is some analysis of the relationship between diet and health, and the impact a poor diet can have on the wider society and the economy.</p> <p>The information is basic and communicated in an unstructured way.</p>	<p>Band 1 1–3 marks</p>
<p>No answer given or answer incorrect/irrelevant.</p>	<p>0 marks</p>

Indicative content:

Students recognise unhealthy diet as imbalanced, lacking in micronutrients and excessive in macronutrients.

Students analyse which aspects of diet contribute the most to the increase in diet-related diseases rates from:

- high saturated fats / trans fats intake
- high sugar intake
- high fast food consumption
- high salt intake
- high fat consumption
- overeating in general

Students indicate diet-related diseases linked to the factors mentioned above from:

- overweight and obesity – as a result of increased fat, saturated fat / trans fat and sugar consumption, or general overeating
- type 2 diabetes – as a result of high fat, saturated fat and sugar intake
- hypertension – as a result of high fat, saturated fat and sodium consumption from highly processed foods
- atherosclerosis and coronary heart disease – as a result of high fat and saturated/trans fat and sugar consumption
- heart attack – as a result of CHD and hypertension
- stroke – as a result of atherosclerosis and hypertension
- bowel or breast cancer – as a result of low fibre consumption and high saturated/trans fat consumption

Students indicate impact a poor diet can have on a wider society and economy:

- people may fall ill more often, and take more time off work, contributing to lower economy
- as people may more often suffer from various diseases/conditions, they will use the NHS more, using up the valuable resources (e.g. medicines, doctors appointment)
- more money may be needed to run the healthcare system to provide for all the ill people
- more doctors and other medical staff will be needed to help treat all the patients
- as there could be more patients, people with other diseases may have to wait longer for their treatment, or may not receive it at all due to shortages in staff/medicines, etc.
- there may be more people requiring dental treatment as diets high in sugar will lead to higher rates of tooth decay and related issues in the population
- an unbalanced diet often leads to obesity – furniture manufacturers may need to redesign their products to cater for the needs of larger, heavier people
- as deficiency in iron may lead to anaemia, more medicine will be needed to treat it; in more serious cases, more blood donors may be needed to ensure there is enough blood for those requiring blood transfusions to treat anaemia, etc.

Other relevant answers may be accepted.