AQA GCSE Combined Science - Trilogy | 8464

SPECIFICATION POINT 4.2.2.6

The effect of lifestyle on some non-communicable diseases

Past-paper questions

Tier	**Foundation**
Question groups	**6**
Available paper years	**2018–2023**

Using this booklet

1. Answer the questions in order and show your working.
2. Original question numbers and marks are retained.
3. Print at actual size (100%) for measuring questions.
4. Use the companion answer booklet to check your work.

Name: _____ **Date:** _____

Whole questions are retained for context, so some parts assess other specification points. Current and legacy sources are labelled. Continue on extra paper if needed.

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 01

June 2018 | 8464/B/1F | Original Q7

0 7 Coronary heart disease (CHD) is a non-communicable disease.

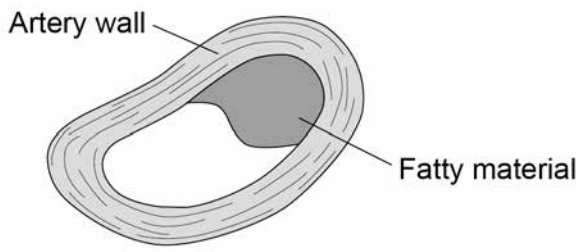
CHD is caused when fatty material builds up in the coronary arteries.

0 7 . 1 Explain what a non-communicable disease is.

[2 marks]

Figure 14 shows a coronary artery of someone with CHD.

Figure 14



0 7 . 2 Explain how CHD can cause a heart attack.

[3 marks]

Question 7 continues on the next page

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 01 · continued

June 2018 | 8464/B/1F | Original Q7

0 7 . 3 Explain how lifestyle and medical risk factors increase the chance of developing CHD.
[6 marks]

11

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 02

November 2020 | 8464/B/1F | Original Q1

0 1 Being overweight can affect the health and life expectancy of a person.

0 1 . 1 What is **one** lifestyle change a person could make to help them lose body mass?

[1 mark]

Tick (✓) **one** box.

Drink more alcohol ☐

Eat less fatty food ☐

Stop smoking ☐

0 1 . 2 Exercise has many health benefits.

Give **two** health benefits of regular exercise.

Do **not** refer to losing body mass in your answer.

[2 marks]

1 _____

_____

2 _____

_____

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 02 · continued

During exercise, breathing rate increases to provide more oxygen for aerobic respiration.

0 1 . 3 What is the equation for aerobic respiration?

[1 mark]

Tick (✓) **one** box.

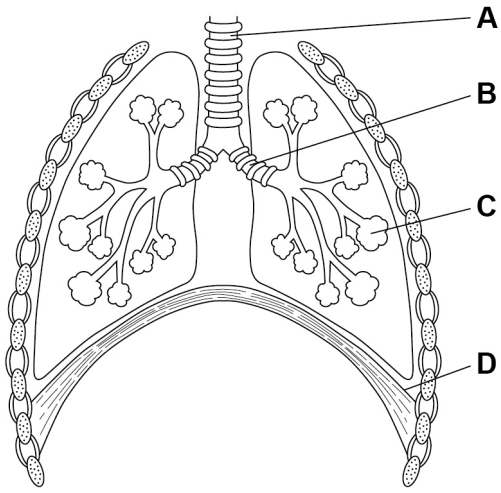
carbon dioxide + water → glucose + oxygen ☐

glucose + oxygen → carbon dioxide + water ☐

oxygen + water → glucose + carbon dioxide ☐

0 1 . 4 **Figure 1** shows the human breathing system.

Figure 1



Where does gas exchange take place?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 02 · continued

A scientist investigated the effect of exercise on the breathing rate of four people.

This is the method used.

1. Measure the resting breathing rate.

2. Exercise for 10 minutes.

3. Measure the breathing rate as soon as exercise stops.

4. Record the time taken for the breathing rate to return to the resting rate.

Table 1 shows the results.

Table 1

Person	Resting breathing rate in breaths per minute	Breathing rate after exercise in breaths per minute	Increase in breathing rate in breaths per minute	Time for breathing rate to return to resting rate in minutes
A	12	45	33	5.5
B	10	28	18	4.0
C	11	35	24	6.5
D	13	52	39	10.0

0 1 . 5 The scientist concluded that person **B** was the fittest.

Give **two** reasons that support the scientist's conclusion.

Use **Table 1**.

[2 marks]

1 _____

_____

2 _____

_____

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 02 · continued

0 1 . 6 Suggest **two** reasons why the scientist's conclusion may **not** be valid.

[2 marks]

1 _____

_____

2 _____

_____

0 1 . 7 Give **two** changes that happen in the body during aerobic exercise.

Do **not** refer to increased breathing rate in your answer.

[2 marks]

1 _____

_____

2 _____

_____

0 1 . 8 Muscles respire anaerobically during vigorous exercise.

Complete the sentences.

Choose answers from the box.

[2 marks]

amino acids	**carbon dioxide**	**glucose**
lactic acid	**oxygen**	

Muscles respire anaerobically if they do not have

enough _____ .

Anaerobic respiration of glucose produces _____ .

13

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 03

June 2022 | 8464/B/1F | Original Q4

0 4 Cigarette smoking is the main cause of cancer in the UK.

0 4 . 1 Mutations in cells cause cancer.

Where in a cell do mutations happen?

[1 mark]

Tick (✓) **one** box.

Cell membrane ☐

Cytoplasm ☐

Nucleus ☐

0 4 . 2 Why do some cancers develop into large tumours?

[1 mark]

Tick (✓) **one** box.

Cells never stop dividing ☐

Cell respiration is slowed down ☐

Enzyme activity is stopped ☐

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 03 · continued

Cigarette smoking has been linked to many different types of cancer.

0 4 . 3 Lung cancer is the most common type of cancer caused by smoking.

Suggest **one** reason why.

[1 mark]

0 4 . 4 A person with lung cancer can develop secondary cancers in other parts of the body.

Describe how this can happen.

[1 mark]

0 4 . 5 Sometimes a person may need a lung transplant.

The National Health Service (NHS) will **not** offer a lung transplant to a person who smokes.

Suggest **one** reason why.

[1 mark]

Question 4 continues on the next page

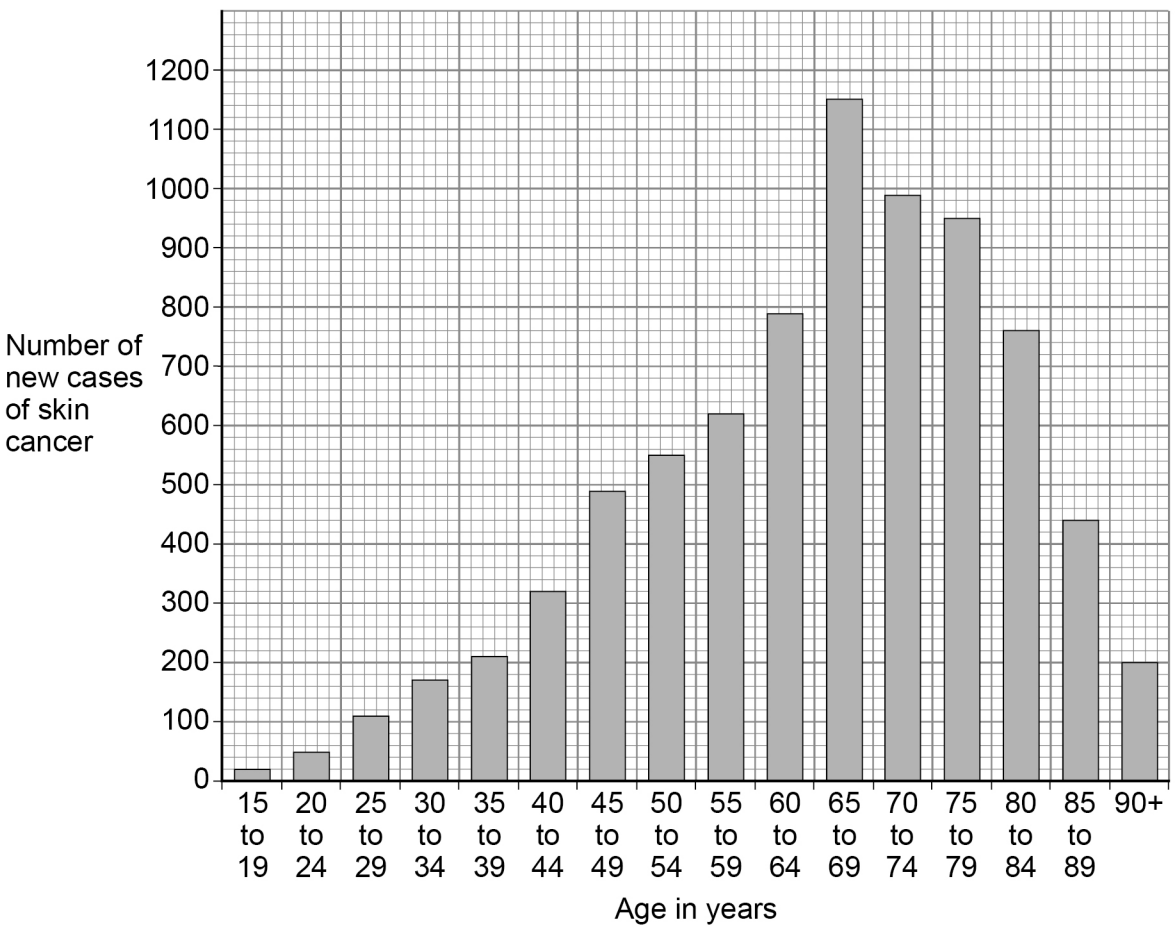
4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 03 · continued

Figure 6 shows data about skin cancer in males for different age groups in the UK.

The data shows the number of new cases of skin cancer in one year.

Figure 6



0 4 . 6 How many more new cases of skin cancer are there in males aged 40 to 44 than in males aged 15 to 19?

[1 mark]

Number of new cases = _____

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 03 · continued

0 4 . 7 There are no new cases of skin cancer diagnosed in males younger than 15 years of age.

Suggest **one** reason why.

[1 mark]

0 4 . 8 Give **one** conclusion from the data in **Figure 6**.

[1 mark]

0 4 . 9 Survival rates for all types of cancers have improved over the last 20 years.

Suggest **two** reasons why.

[2 marks]

1

2

10

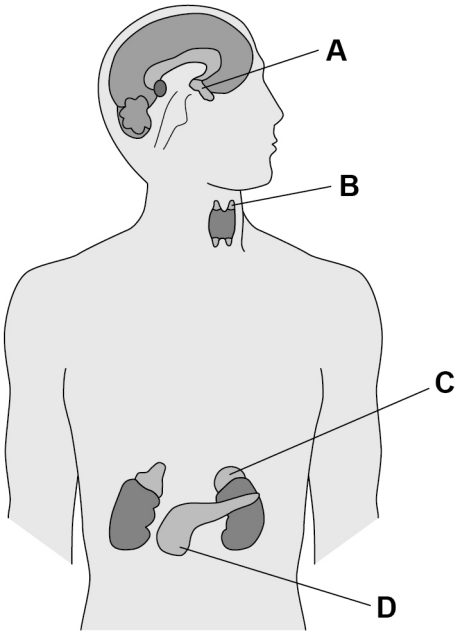
4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 04

0 4 The endocrine system is made up of glands which secrete hormones.

Figure 5 shows the position of endocrine glands in the human body.

Figure 5



0 4 . 1 Which letter shows the pancreas?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

0 4 . 2 Which letter shows the thyroid gland?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 04 · continued June 2022 | 8464/B/2F | Original Q4

0 4 . 3 Hormones travel from the gland where they are made to the target organ where they have an effect.

How do hormones travel from the gland to the target organ?

[1 mark]

When blood glucose concentration becomes too high, hormone **X** from the pancreas causes a decrease in the glucose concentration.

0 4 . 4 Name hormone **X**.

[1 mark]

0 4 . 5 In what **two** ways does hormone **X** cause a decrease in blood glucose concentration?

[2 marks]

Tick (✓) **two** boxes.

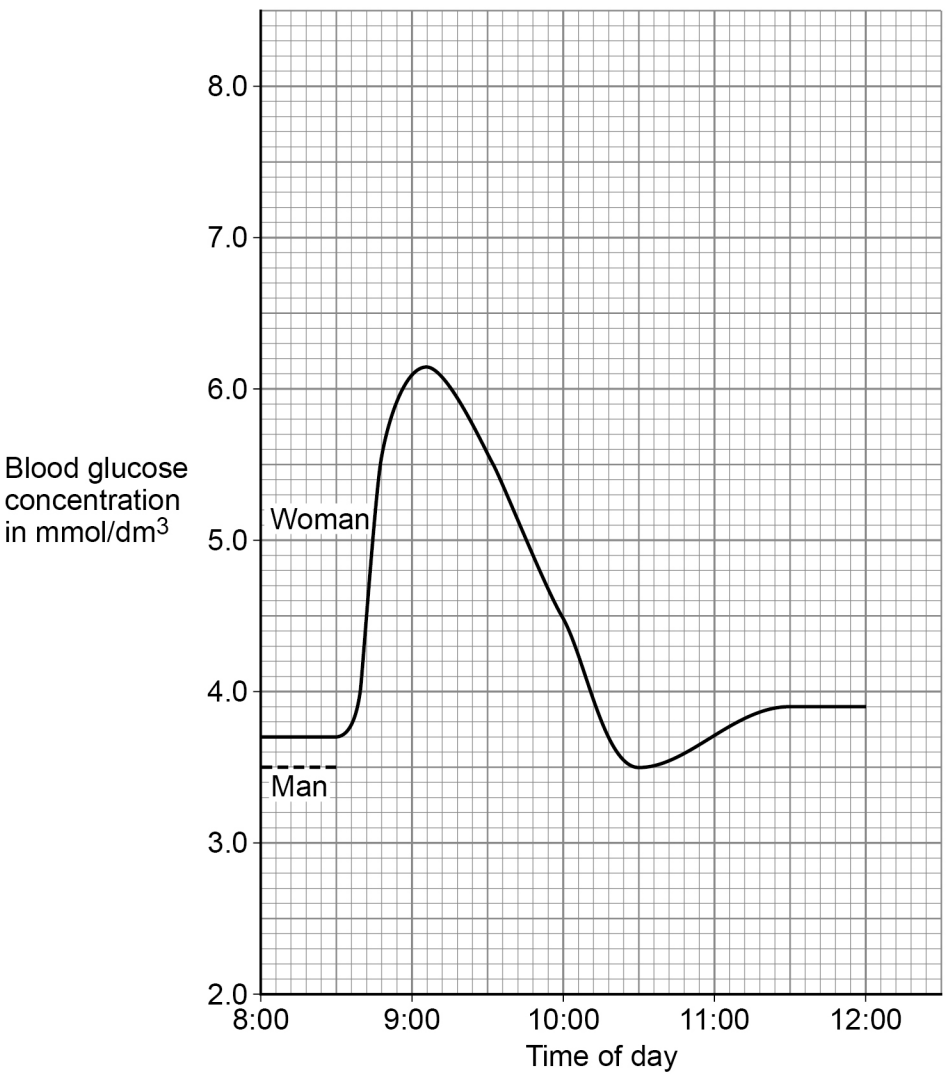
- Glucose is broken down. ☐
- Glucose is converted to glycogen. ☐
- Glucose is excreted by the kidneys. ☐
- Glucose moves from the blood into the cells. ☐
- Glucose moves into the small intestine. ☐

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 04 · continued

Figure 6 shows the blood glucose concentration in a woman.

Figure 6



0 4 . 6 Suggest what time of day the woman ate her breakfast of sugar-coated cereal.

[1 mark]

Time of day = _____

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 04 · continued

The man in **Figure 6** has Type 2 diabetes but he has **not** been treated.

0 4 . 7 The man ate:

- the same type and amount of breakfast cereal as the woman
- at the same time as the woman.

Suggest what his blood glucose concentration would be at 9:00

[1 mark]

Blood glucose concentration = _____ $mmol/dm^3$

0 4 . 8 The man:

- is an obese office worker
- does not exercise
- eats sugary snacks at his desk.

Give **two** lifestyle changes a doctor might recommend to the man to help him control his diabetes.

[2 marks]

1 _____

_____

2 _____

_____

0 4 . 9 Describe how a **low** blood glucose concentration would lead to a person feeling weak.

[2 marks]

_____

_____

_____

_____

12

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 05

June 2023 | 8464/B/1F | Original Q6

0 6 Communicable and non-communicable diseases are major causes of ill health.

0 6 . 1 Which disease is a **non-communicable** disease?

[1 mark]

Tick (✓) **one** box.

AIDS ☐

Cancer ☐

Gonorrhoea ☐

Malaria ☐

Obesity is a risk factor for many non-communicable diseases.

0 6 . 2 Give **one** non-communicable disease that obesity is a risk factor for.

Do **not** refer to the diseases given in Question **06.1** in your answer.

[1 mark]

0 6 . 3 National policies are used to help people who are obese to lose weight.

One national policy is to reduce the amount of sugar added to food and drinks.

Suggest **one other** national policy that could help people to lose weight.

[1 mark]

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 05 · continued

0 6 . 4 Body mass index (BMI) is one measure of obesity.

BMI is calculated using the equation:

$$\text{BMI} = \frac{\text{body mass in kg}}{(\text{height in m})^2}$$

Table 4 shows how BMI is used to describe an adult's BMI category.

Table 4

BMI	BMI category
<18.5	Underweight
18.5 to 24.9	Healthy weight
25.0 to 29.9	Overweight
>29.9	Obese

A person is 1.64 m tall and has a mass of 69 kg.

Determine the **BMI category** for this person.

Use the BMI equation and **Table 4**.

[3 marks]

The person's BMI category is _____

Question 6 continues on the next page

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 05 · continued

Scientists investigated the effect of smoking and of BMI on the birth mass of babies.

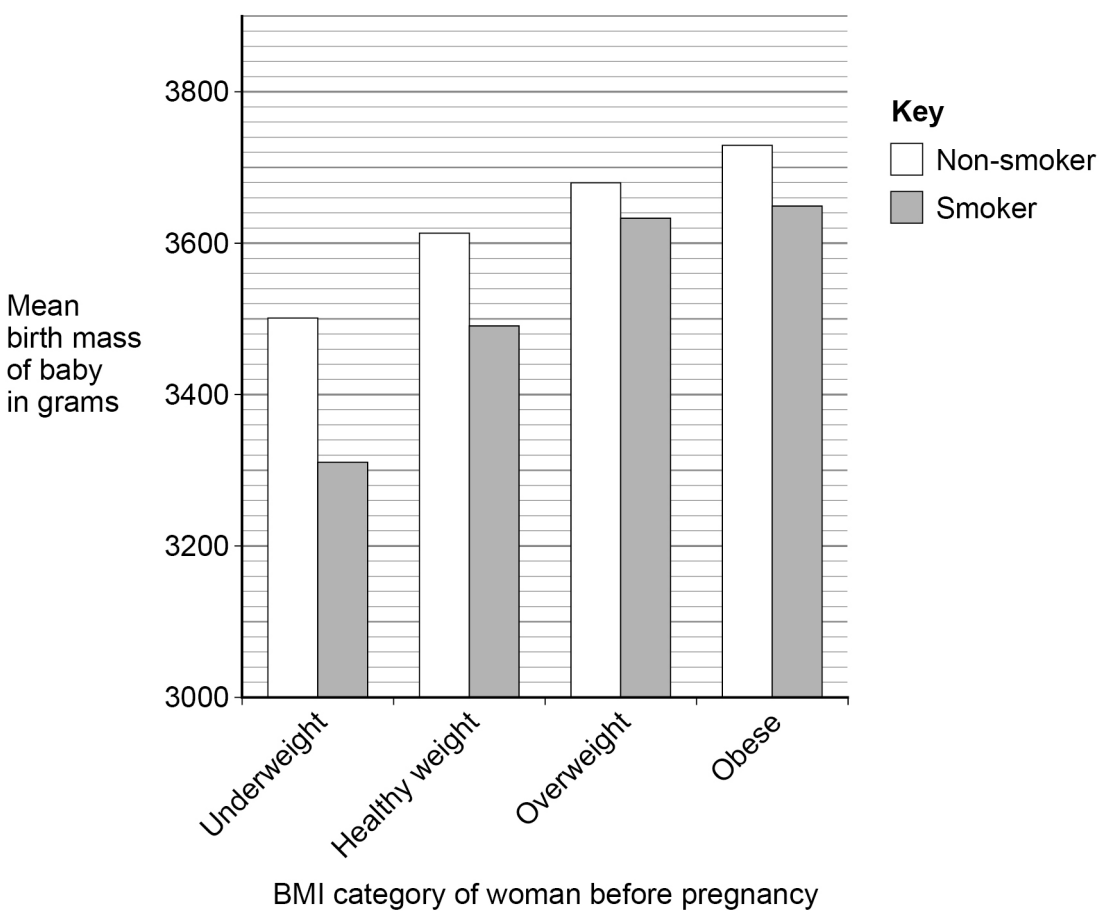
Women's BMI categories were determined before the women became pregnant.

0 6 . 5 Suggest why BMI categories were determined **before** the women became pregnant.

[1 mark]

Figure 9 shows the results.

Figure 9



4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 05 · continued

0 6 . 6 Give **two** conclusions that can be made from **Figure 9**.

[2 marks]

1 _____

_____

2 _____

_____

0 6 . 7 Measles is a communicable disease.

A virus causes measles.

Describe how the measles virus is transferred from person to person.

[2 marks]

_____

_____

_____

_____

Question 6 continues on the next page

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 05 · continued June 2023 | 8464/B/1F | Original Q6

Athlete's foot is a communicable disease.

A fungus causes athlete's foot.

The athlete's foot fungus infects the skin on feet.

0 6 . 8 Scientists estimate that 17% of the UK population have athlete's foot.

The estimated UK population is 67 961 900

Calculate how many people are estimated to have athlete's foot.

[2 marks]

Estimated number of people with athlete's foot = _____

0 6 . 9 Athlete's foot fungus grows in moist conditions.

Suggest **one** way a person could reduce their chance of catching athlete's foot.

[1 mark]

14

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 06

June 2023 | 8464/B/2F | Original Q5

0 5 Homeostasis is the control of internal body conditions.

Control of body temperature is an example of homeostasis.

0 5 . 1 Draw **one** line from each part involved in temperature control to the function of that part.

[3 marks]

Part involved in temperature control	Function
	Changes air temperature outside the body
Brain	
	Contracts to increase body temperature
Muscle	
	Coordinates information about body temperature
Receptor	
	Detects changes in skin temperature

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 06 · continued

June 2023 | 8464/B/2F | Original Q5

0 5 . 2 Why is homeostasis important?

[2 marks]

Tick (✓) **two** boxes.

- To allow cells to function properly ☐
- To change body temperature to match air temperature ☐
- To decrease water levels in the body throughout the day ☐
- To maintain the optimum conditions for enzymes ☐
- To prevent reactions inside cells ☐

Question 5 continues on the next page

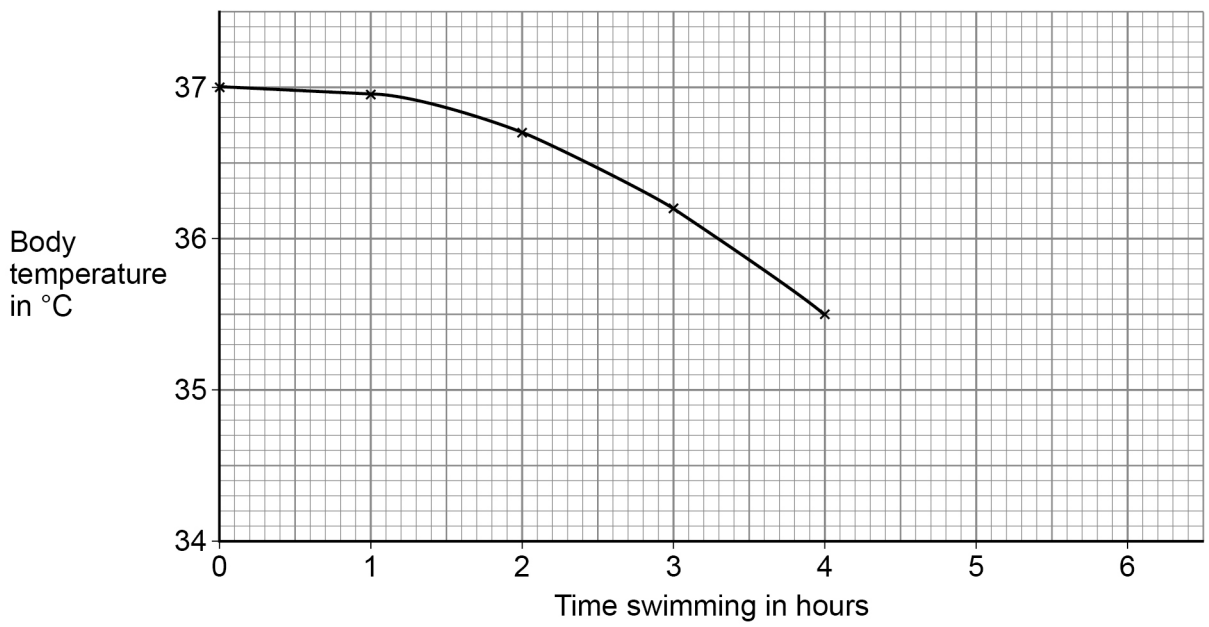
4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 06 · continued

The body temperature of a long-distance swimmer can change with the length of time swimming in cold water.

Figure 6 shows how the body temperature of one swimmer changed in the first 4 hours of a 6-hour swim.

Figure 6



0 5 . 3 Describe the trend shown in **Figure 6**.

[1 mark]

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Question 06 · continued

0 5 . 4 Determine the change in body temperature in the first 4 hours of the swim.

[2 marks]

Change in body temperature = _____ °C

0 5 . 5 Hypothermia is a dangerously low body temperature of 35 °C or colder.

Predict when the swimmer was **first** at risk of hypothermia.

You should extend the line on **Figure 6**.

[2 marks]

Prediction = _____ hours

Question 5 continues on the next page

4.2.2.6 The effect of lifestyle on some non-communicable diseases

Swimming in cold water decreases the insulin concentration in the blood.

0 5 . 6 Complete the sentence.

Choose the answer from the box.

[1 mark]

heart	pancreas	stomach

Insulin is produced by the _____ .

0 5 . 7 Insulin is a hormone.

Which organ system produces hormones?

[1 mark]

_____

0 5 . 8 Complete the sentence.

Choose the answer from the box.

[1 mark]

decrease	stay the same	increase

When insulin concentration in the blood increases, blood glucose concentration will _____ .

0 5 . 9 Give **one** risk factor for Type 2 diabetes.

[1 mark]

_____

14