AQA GCSE Combined Science - Trilogy | 8464

SPECIFICATION POINT 4.5.3.1

# Human endocrine system

## Past-paper questions

| | |
|---|---|
| Tier | **Foundation** |
| Question groups | **5** |
| Available paper years | **2018–2024** |

## 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.

### 4.5.3.1 Human endocrine system

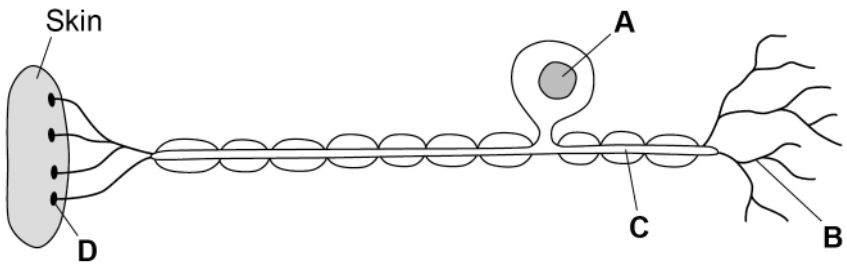
**Question 01**

June 2018 | 8464/B/2F | Original Q3

**0 3** This question is about coordination in the human body.

**Figure 2** shows a sensory neurone (nerve cell).

**Figure 2**




**0 3 . 1** Which label is the cell nucleus?

**[1 mark]**

Tick **one** box.

**A** ☐ **B** ☐ **C** ☐ **D** ☐

**0 3 . 2** Which label is the receptor?

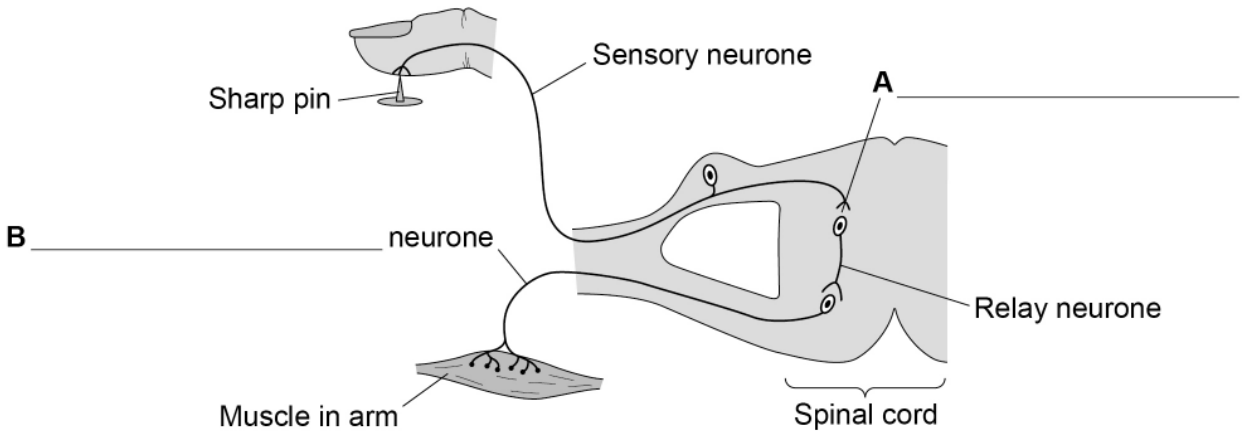
**[1 mark]**

Tick **one** box.

**A** ☐ **B** ☐ **C** ☐ **D** ☐

**0 3 . 3** **Figure 3** shows the nerve pathway when a person touches a sharp pin.

**Figure 3**




Name structures **A** and **B** on **Figure 3**

**[2 marks]**

4.5.3.1 Human endocrine system

Question 01 · continued



**0 3 . 4** When the finger touches the sharp pin, the muscle in the arm contracts to pull the arm away.

What type of action is this?

**[1 mark]**

Tick **one** box.

A conscious action ☐

A delayed action ☐

A reflex action ☐

**0 3 . 5** Doctors tested people of different ages to time how long it took between touching a sharp pin and the arm muscle contracting.

At each age they tested five men and calculated a mean value for the time.

**Table 1** shows the results.

**Table 1**

| Age in years | Mean time for muscle to contract in milliseconds |
|---|---|
| 20 | 18 |
| 40 | 20 |
| 60 | 23 |
| 80 | 30 |

How much longer does it take for the muscle to contract at 80 years of age compared to at 20 years of age?

Give your answer in seconds.

**[2 marks]**

Time = _____ s

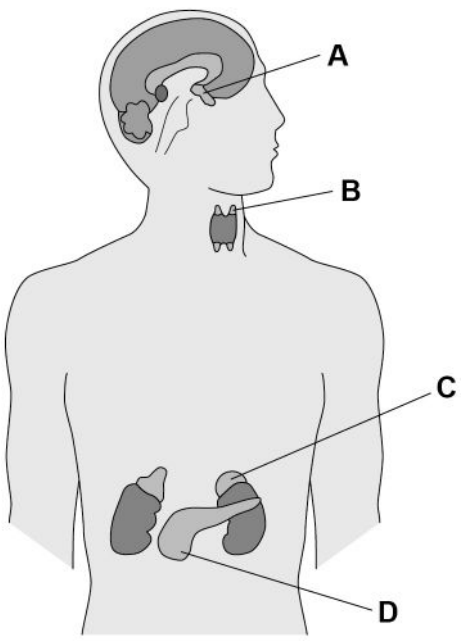
4.5.3.1 Human endocrine system

Question 01 · continued



**0 3 . 6** **Figure 4** shows the position of some of the glands which release hormones.

**Figure 4**




Which label on **Figure 4** shows the position of the pituitary gland?

**[1 mark]**

Tick **one** box.

**A** ☐ **B** ☐ **C** ☐ **D** ☐

**0 3 . 7** Luteinising hormone (LH) is a hormone released by the pituitary gland.

What is the function of LH?

**[1 mark]**

Tick **one** box.

Controls blood glucose concentration ☐

Controls the formation of sperm ☐

Controls the growth of muscles ☐

Controls the release of an egg ☐

4.5.3.1 Human endocrine system

Question 01 · continued



**0 3 . 8** How does LH travel from the pituitary gland to its target organ?

**[1 mark]**

_____

**0 3 . 9** **Figure 5** shows the relative levels of sex hormones of three young people over 30 days.

One person is an 8-year-old girl, one is an 18-year-old boy and the other is an 18-year-old girl.

**Figure 5**




Which person is the 18-year-old boy?

Give **one** reason for your answer.

**[2 marks]**

Person _____

Reason _____

_____

12

### 4.5.3.1 Human endocrine system

**Question 02**

November 2020 | 8464/B/2F | Original Q4

**0 4** Homeostasis regulates the internal conditions of the human body.

**0 4 . 1** Which **two** processes are regulated by homeostasis?

**[2 marks]**

Tick (✓) **two** boxes.

- Controlling water output in urine ☐
- Defending the body against pathogens ☐
- How quickly you walk ☐
- Keeping cool on a hot day ☐
- Waking up in the morning ☐

4.5.3.1 Human endocrine system

Question 02 · continued

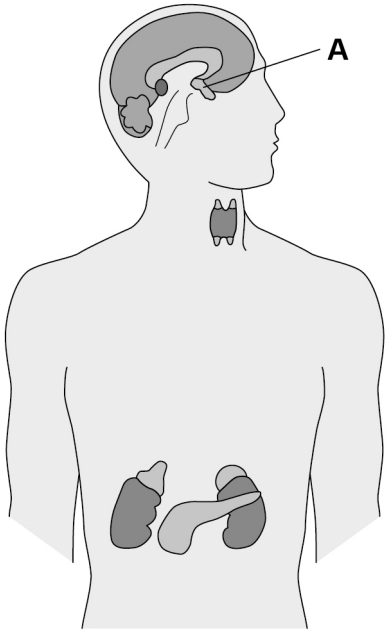


Hormones are produced by glands in the endocrine system.

Each hormone has an effect on a target organ.

**Figure 6** shows glands of the endocrine system.

**Figure 6**




**0 4 . 2** What is the name of gland **A**?

**[1 mark]**

Tick (✓) **one** box.

Pancreas ☐

Pituitary ☐

Thyroid ☐

**Question 4 continues on the next page**

Before eating a sugar-coated cereal a person had a blood glucose concentration of 5.2 mmol/dm$^3$

Soon after eating the cereal the person had a blood glucose concentration of 8.4 mmol/dm$^3$

**0 4 . 3** Calculate the increase in the blood glucose concentration.

**[1 mark]**

Increase = _____ mmol/dm$^3$

**0 4 . 4** The person needed medication to decrease their blood glucose concentration.

Suggest what disorder the person has.

**[1 mark]**

**0 4 . 5** There is a problem with the hormone control of the person.

What is the problem?

**[1 mark]**

Tick (✓) **one** box.

- The blood is not taking hormones to target organs. ☐
- The pancreas is not releasing insulin. ☐
- The pituitary gland is not being stimulated. ☐

4.5.3.1 Human endocrine system

Question 02 · continued



**0 4 . 6** The person:

- works in an office
- drives to work
- is overweight
- watches the television and reads every night
- drinks a hot chocolate every night.

Suggest **two** lifestyle changes the person could make to help treat their disorder.

**[2 marks]**

1 _____

_____

2 _____

_____

8

**Turn over for the next question**

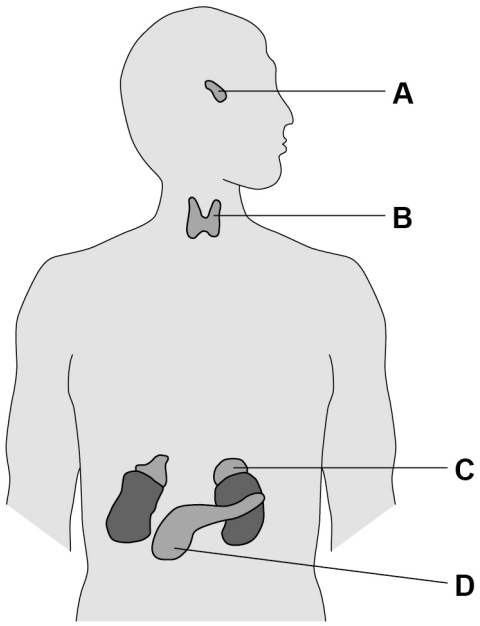
### 4.5.3.1 Human endocrine system

**Question 03**

November 2021 | 8464/B/2F | Original Q6

**0 6** **Figure 5** shows glands in the human body.

**Figure 5**




**0 6 . 1** Which organ system includes the glands shown in **Figure 5**?

**[1 mark]**

**0 6 . 2** Which gland produces insulin?

**[1 mark]**

Tick (✓) **one** box.

**A** ☐ **B** ☐ **C** ☐ **D** ☐

**0 6 . 3** Which gland produces hormones that stimulate the other glands to produce hormones?

**[1 mark]**

Tick (✓) **one** box.

**A** ☐ **B** ☐ **C** ☐ **D** ☐

4.5.3.1 Human endocrine system

Question 03 · continued



**0 6 . 4** How do hormones travel from one gland to another gland?

**[1 mark]**

**0 6 . 5** Name **two** glands involved in human reproduction.

Do **not** refer to glands shown on **Figure 5** in your answer.

**[2 marks]**

1 _____

2 _____

**0 6 . 6** Ovulation test kits can help women know when they are most fertile.

Ovulation test kits detect the increase in the hormone that stimulates ovulation.

Which hormone is detected by ovulation test kits?

**[1 mark]**

Tick (✓) **one** box.

- Follicle stimulating hormone (FSH) ☐
- Luteinising hormone (LH) ☐
- Oestrogen ☐
- Progesterone ☐

4.5.3.1 Human endocrine system

Question 03 · continued



**0 6 . 7** A new contraceptive drug for men is being tested.

The drug:

- is given in one injection
- stops sperm being able to fertilise eggs
- is effective for up to 13 years.

Evaluate the use of the new drug compared with existing contraceptive methods.

**[6 marks]**

13

### 4.5.3.1 Human endocrine system

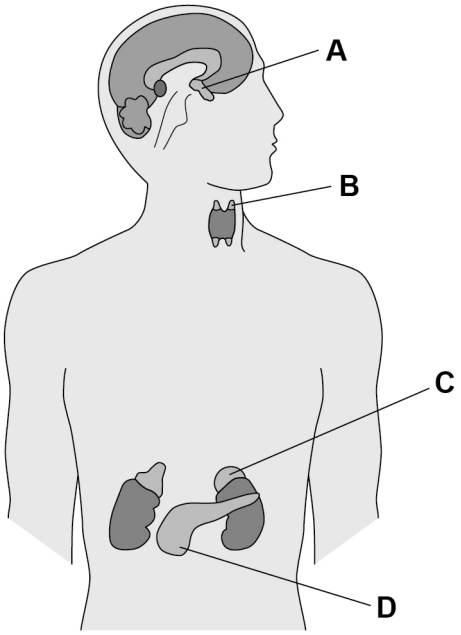
**Question 04**

June 2022 | 8464/B/2F | Original Q4

**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** ☐

4.5.3.1 Human endocrine system

Question 04 · continued



**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. ☐

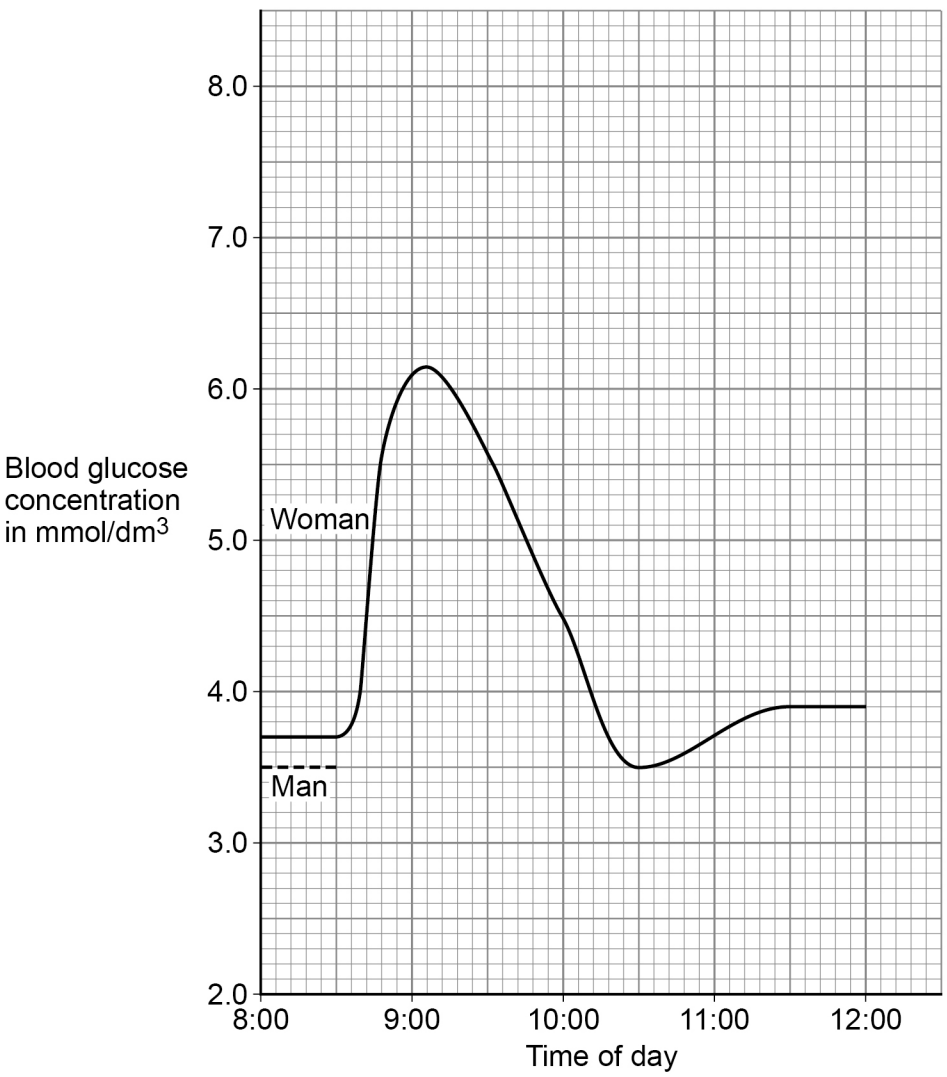
4.5.3.1 Human endocrine system

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 = _____

4.5.3.1 Human endocrine system

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

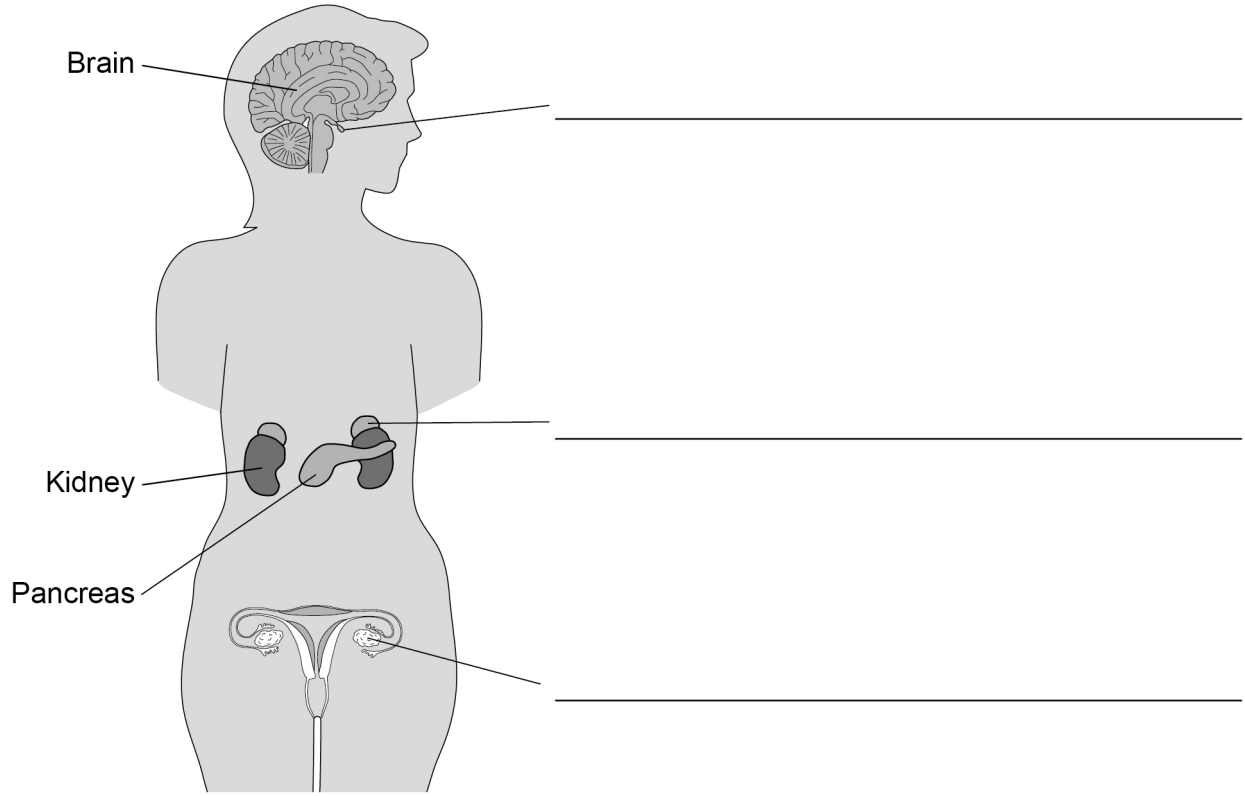
4.5.3.1 Human endocrine system

Question 05



**0 2** **Figure 2** shows organs and glands in a human body.

**Figure 2**




**0 2 . 1** Label the glands on **Figure 2**.

Choose answers from the box.

**[3 marks]**

| | | |
|---|---|---|
| **adrenal gland** | **ovary** | **pituitary gland** |
| **testis** | **thyroid gland** | |

**Question 2 continues on the next page**

4.5.3.1 Human endocrine system

Question 05 · continued



**0 2 . 2** Cells in the pancreas detect blood glucose concentration.

What type of cells **detect** blood glucose concentration?

**[1 mark]**

Tick (✓) **one** box.

Coordinator cells ☐

Muscle cells ☐

Receptor cells ☐

**0 2 . 3** The pancreas produces insulin.

How is insulin transported from the pancreas to the rest of the body?

**[1 mark]**

4.5.3.1 Human endocrine system

Question 05 · continued



**0 2 . 4** Which organ is a target organ of insulin?

**[1 mark]**

Tick (✓) **one** box.

- Liver ☐
- Small intestine ☐
- Stomach ☐

**0 2 . 5** Which chemical is a store of glucose in human cells?

**[1 mark]**

Tick (✓) **one** box.

- Cellulose ☐
- Glycogen ☐
- Protein ☐

**Question 2 continues on the next page**

4.5.3.1 Human endocrine system

Question 05 · continued

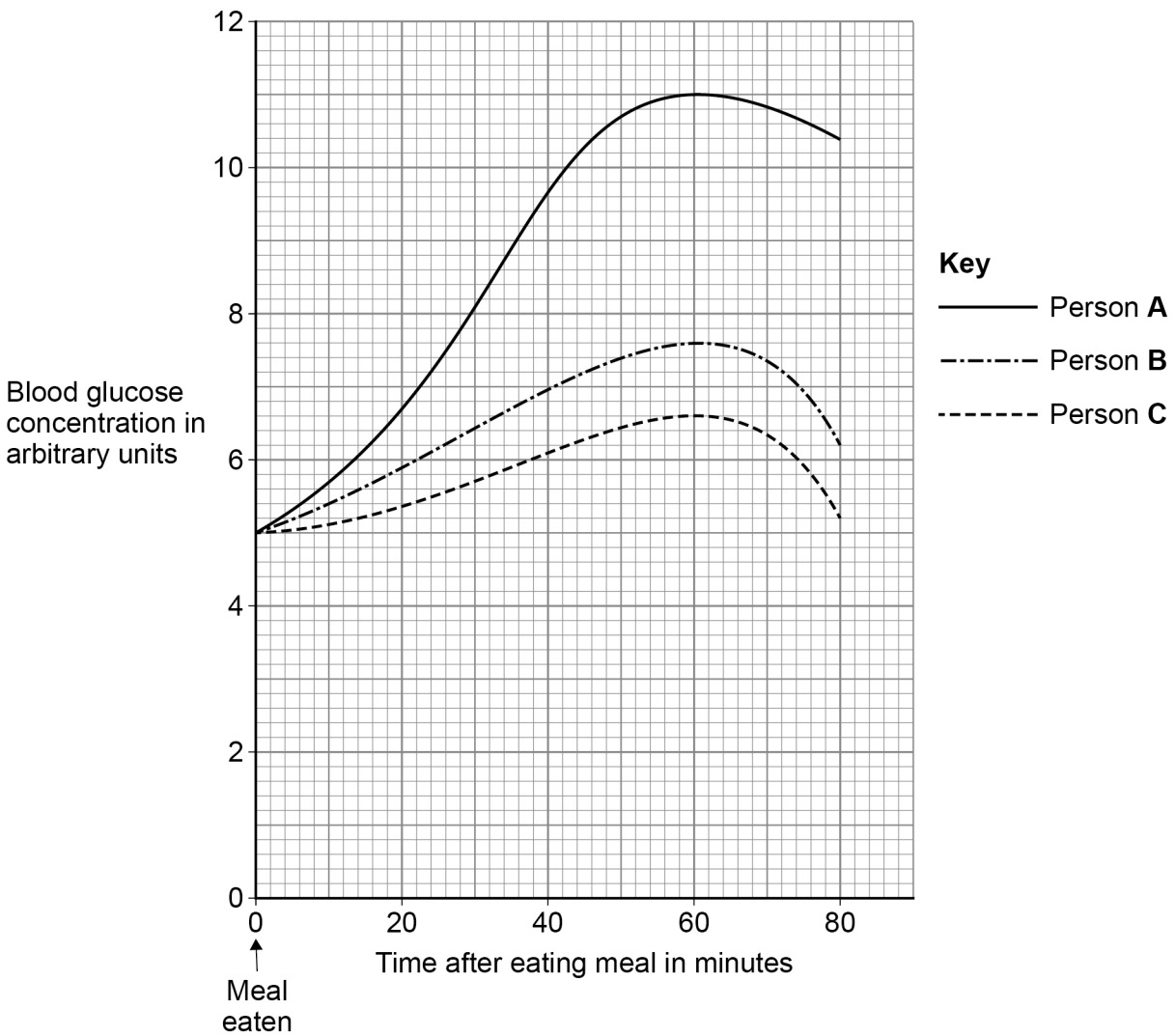


Three people each ate similar meals.

The blood glucose concentration of each person was recorded for 80 minutes after the meal.

**Figure 3** shows the results.

**Figure 3**




**0 2 . 6** What was the **change** in blood glucose concentration in person **A** from 0 minutes to 60 minutes?

**[1 mark]**

Change = _____ arbitrary units

4.5.3.1 Human endocrine system

Question 05 · continued



**0 2 . 7** Describe the **trend** in the relationship between blood glucose concentration and time after the meal.

**[2 marks]**

**0 2 . 8** A student concluded:

'Person **A** has diabetes'.

Explain how **Figure 3** supports the student's conclusion.

You should refer to insulin in your answer.

**[2 marks]**

**0 2 . 9** Describe **two** ways a person with Type 2 diabetes could change their lifestyle to control their diabetes.

**[2 marks]**

1

2

**14**