AQA GCSE Biology | 8461

SPECIFICATION POINT 4.5.3.7

Negative feedback (HT only)

Past-paper questions

Tier	**Higher**
Question groups	**2**
Available paper years	**2023–2024**

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.

4.5.3.7 Negative feedback (HT only)

Question 01

June 2023 | 8461/2H | Original Q5

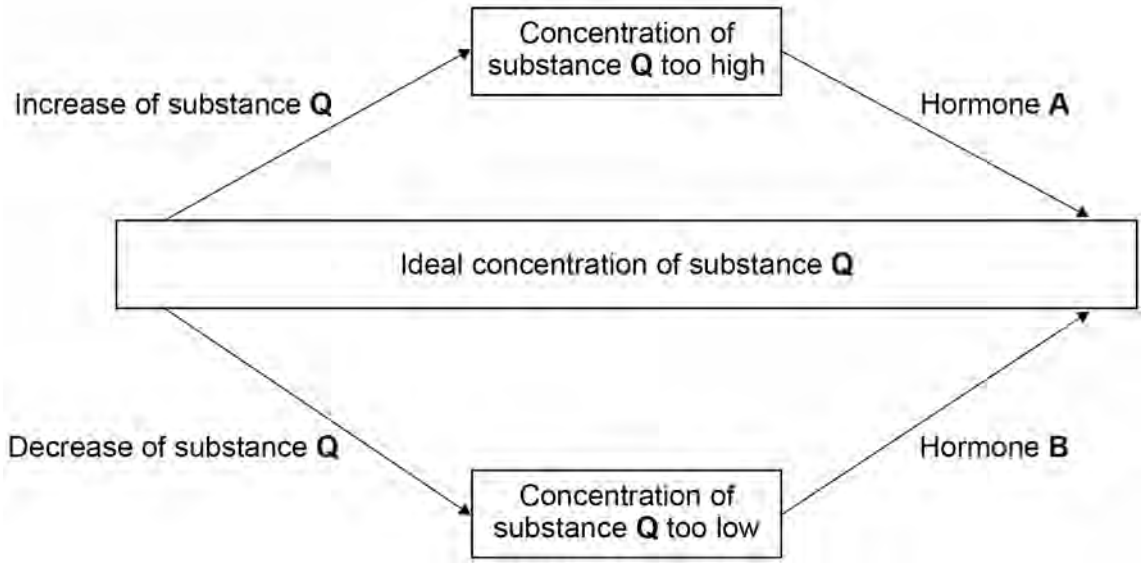
0 5 Homeostasis is the regulation of the body's internal conditions.

Many internal conditions are controlled by hormones.

Homeostasis works by negative feedback control.

0 5 . 1 **Figure 8** shows how the concentration of substance **Q** in the blood is controlled by negative feedback.

Figure 8



Explain how the concentration of substance **Q** in the blood is controlled by negative feedback.

Use information from **Figure 8**.

[3 marks]

4.5.3.7 Negative feedback (HT only)

Question 01 · continued

0 5 . 2 Thyroxine is a hormone produced by the thyroid gland.

A decrease in body temperature causes an increase in thyroxine production.

Explain how the production of thyroxine causes an **increase** in body temperature.

[2 marks]

Question 5 continues on the next page

4.5.3.7 Negative feedback (HT only)

Question 01 · continued

0 5 . 3 ADH is a hormone made by the pituitary gland.

ADH controls how much water is reabsorbed from the kidney tubules.

Table 2 shows effects of ADH.

Table 2

Concentration of ADH in the blood in nanograms/dm^3	Concentration of dissolved substances in urine in arbitrary units	Rate of urine production in cm^3/minute
0.0	50	20.0
1.25	700	8.8
2.50	980	3.9
3.75	1110	1.8
5.00	1170	0.9

The concentration of ADH in a man's blood was 3.75 nanograms/dm^3.

The concentration of ADH in his blood decreased to 1.25 nanograms/dm^3.

Explain how the decrease in the concentration of ADH would cause the changes to the urine shown in **Table 2**.

[4 marks]

9

4.5.3.7 Negative feedback (HT only)

Question 02

0 5 The human body has two coordination systems:

- the nervous system
- the endocrine system.

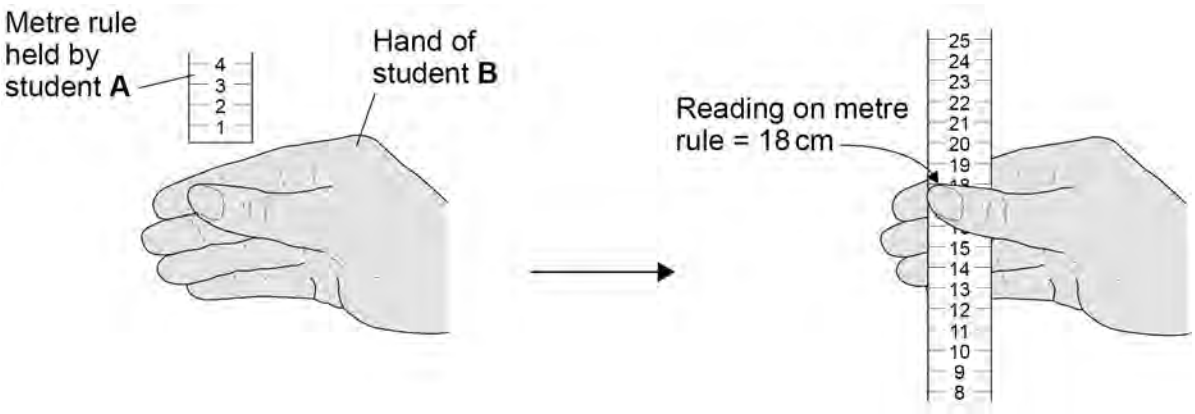
0 5 . 1 Two students investigated human reaction time.

Student **A** held a metre rule above student **B**'s hand.

Student **A** then released the metre rule and student **B** caught the rule as quickly as possible.

Figure 8 shows the method used.

Figure 8



Suggest **two** ways to improve the students' method for measuring human reaction time.

[2 marks]

1 _____

_____

2 _____

_____

4.5.3.7 Negative feedback (HT only)

Question 02 · continued

0 5 . 2 Student **B**'s reaction is coordinated by the nervous system.

Give **two** ways that coordination by the endocrine system is different from coordination by the nervous system.

[2 marks]

1 _____

_____

2 _____

_____

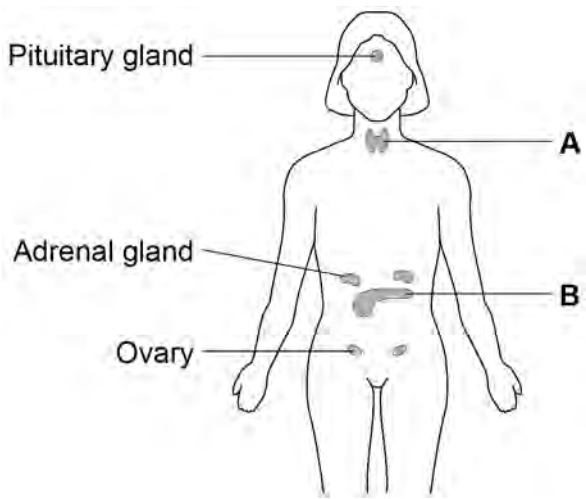
Question 5 continues on the next page

4.5.3.7 Negative feedback (HT only)

Question 02 · continued

Figure 9 shows endocrine glands in a female.

Figure 9



0 5 . 3 Name **one** hormone produced by gland **A**.

[1 mark]

_____

0 5 . 4 Name **one** hormone produced by gland **B**.

[1 mark]

_____

0 5 . 5 The adrenal gland produces the hormone adrenaline.

Describe **two** effects of adrenaline on the human body.

[2 marks]

1 _____

_____

2 _____

_____

4.5.3.7 Negative feedback (HT only)

Question 02 · continued

0 5 . 6 Hormones can be used for controlling human reproduction.

Explain the use of hormones in:

- contraception
- the treatment of infertility.

[6 marks]

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