AQA GCSE Biology | 8461

SPECIFICATION POINT 4.5.1

# Homeostasis

## Past-paper questions

| | |
|---|---|
| Tier | **Foundation** |
| Question groups | **6** |
| Available paper years | **2010–2017** |

## 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.

### 4.5.1 Homeostasis

**Question 01**

June 2010 | BLY1AP | Original Q3 | Legacy

**QUESTION THREE**

The human body responds to changes in the environment.

Match words, **A**, **B**, **C** and **D**, with the numbers **1–4** in the sentences.

**A** muscles

**B** stimuli

**C** receptors

**D** neurones

Changes in the environment that the body detects are called . . . **1** . . . .

Changes in the environment are detected by special cells called . . . **2** . . . .

Electrical impulses are then sent along . . . **3** . . . .

The response is often brought about by . . . **4** . . . .

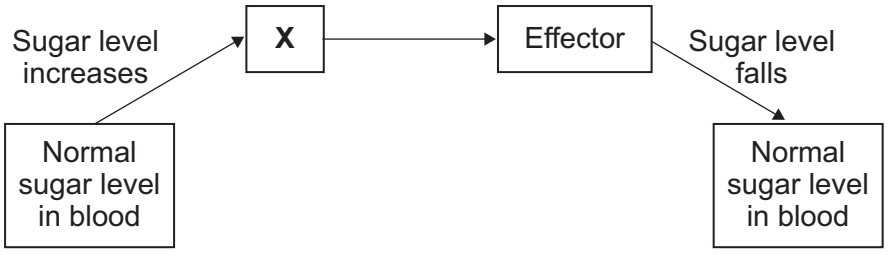
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Question 02

June 2011 | BLY1AP | Original Q8 | Legacy

## QUESTION EIGHT

The diagram shows what happens to sugar levels in the blood after a meal.




**8A** Structure **X** is sensitive to increases in blood sugar levels.

Structure **X** is a . . .

**1** synapse.

**2** relay neurone.

**3** motor neurone.

**4** receptor.

**8B** Structure **X** sends information to the effector in the blood stream.

This information is sent as . . .

**1** a hormone.

**2** an enzyme.

**3** a synapse.

**4** a nerve impulse.

**8C** All effectors are . . .

**1** glands.

**2** neurones.

**3** target organs.

**4** muscles.

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Question 02 · continued



**8D** Sometimes, the organs controlling blood sugar concentration do not work properly and the sugar levels in the blood stay high.

This condition is called . . .

**1** arthritis.

**2** diabetes.

**3** heart disease.

**4** rubella.

**Turn over for the next question**

### 4.5.1 Homeostasis

**Question 03**

June 2012 | BL1FP | Original Q1 | Legacy

**1** The nervous system allows humans to react to their surroundings.

**1 (a)** Sense organs have receptors. Receptors detect *changes in the environment*.

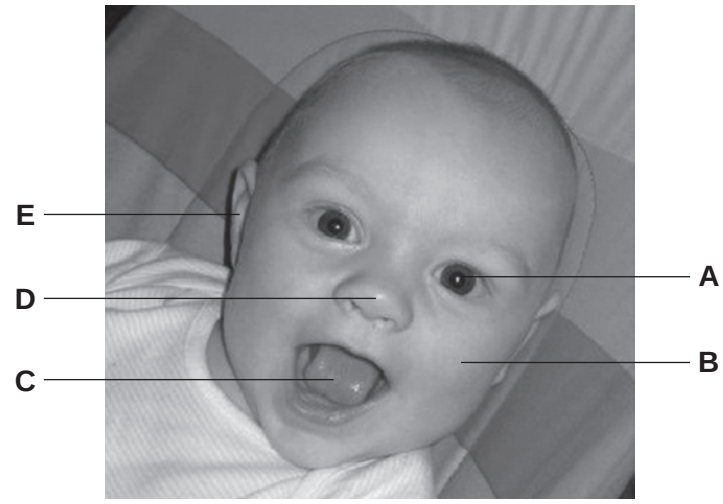
Which word describes *a change in the environment*?

Draw a ring around **one** answer.

**an effector** **a neurone** **a stimulus**

*(1 mark)*

**1 (b)** The photograph shows a baby.
Labels **A**, **B**, **C**, **D** and **E** show some of the baby's sense organs.




Answer each question by writing **one** letter, **A**, **B**, **C**, **D** or **E**, in each box.

**1 (b) (i)** Which sense organ has receptors sensitive to light? ☐

*(1 mark)*

**1 (b) (ii)** Which **two** sense organs have receptors sensitive to chemicals?

☐ and ☐

*(2 marks)*

**1 (b) (iii)** Which sense organ has receptors sensitive to changes in the baby's position? ☐

*(1 mark)*

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Question 03 · continued



**1 (c)** Information from sense organ **A** is passed along nerve cells.
The information is coordinated to produce a response.

Which organ in the body coordinates the information?

.....

*(1 mark)*

6

**Turn over for the next question**

### 4.5.1 Homeostasis

**Question 04**

January 2013 | BL1FP | Original Q2 | Legacy

**2** The body controls internal conditions.

**2 (a)** Use words from the box to complete the sentences about water loss from the body.

| | | | |
|---|---|---|---|
| **kidneys** | **liver** | **lungs** | **skin** |

**2 (a) (i)** Water is lost in sweat via the ..... .

*(1 mark)*

**2 (a) (ii)** Water is lost in urine via the ..... .

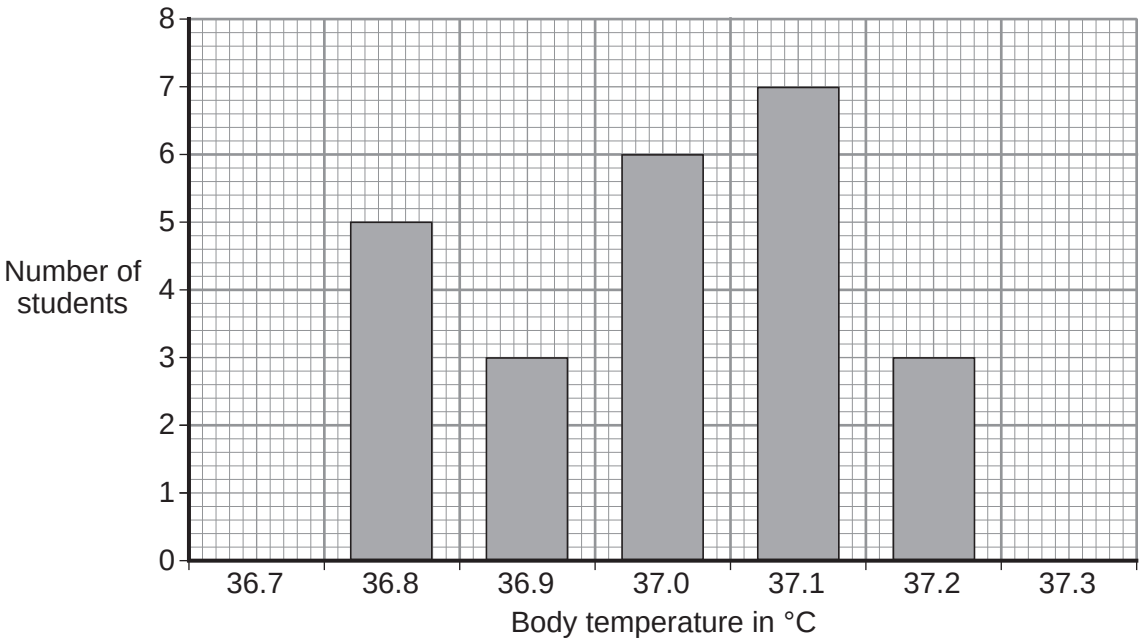
*(1 mark)*

**2 (a) (iii)** Water is lost in the breath via the ..... .

*(1 mark)*

**2 (b)** Students investigated body temperature in the class.

The bar chart shows the results.



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Question 04 · continued



**2 (b) (i)** One student used the bar chart to calculate the mean body temperature of the class. The student calculated the mean body temperature as 37.0 °C.

How did the student use the bar chart to calculate the mean?

.....

.....

.....

.....

*(2 marks)*

**2 (b) (ii)** How many students had a body temperature higher than the mean of 37.0 °C?

.....

*(1 mark)*

**2 (b) (iii)** Body temperature must be kept within a narrow range.

Why?

.....

.....

*(1 mark)*

7

### 4.5.1 Homeostasis

**Question 05**

June 2015 | BL1FP | Original Q1 | Legacy

**1** Humans use the nervous system to react to changes in the environment.

**1 (a) (i)** Which word means a change in the environment?

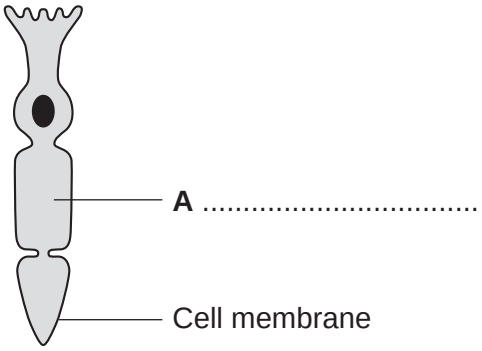
Draw a ring around the correct answer.

**[1 mark]**

**neurone** **reflex** **stimulus**

**1 (a) (ii)** **Figure 1** shows a light receptor cell.

**Figure 1**




Use the correct answer from the box to label part **A** on **Figure 1**.

**[1 mark]**

| | | |
|---|---|---|
| **chloroplast** | **cytoplasm** | **vacuole** |

**1 (b)** **Figure 2** shows a boy riding a bicycle on a sunny day.

**Figure 2**



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Question 05 · continued



**1 (b) (i)** Receptors in the boy's body detect changes in the environment.

Complete **Table 1** to show which organ of the body contains the receptors for each change in the environment.

**[3 marks]**

**Table 1**

| Change in the environment | Organ that contains the receptors |
|---|---|
| Sound of traffic from behind him | |
| Flashing blue lights of a police car | |
| Cooler air temperature in the shadows | |

**1 (b) (ii)** The boy's response to danger is to pull on the bicycle brakes.

Which type of effector causes this response?

Tick (✓) **one** box.

**[1 mark]**

A gland ☐

A muscle ☐

A synapse ☐

6

### 4.5.1 Homeostasis

**Question 06**

June 2017 | BL1FP | Original Q9 | Legacy

**9** The human body responds to changes in internal conditions and external conditions.

**9 (a)** The water and ion content of the body must be controlled.

Ions are lost from the body in different liquids from different organs.

**9 (a) (i)** Complete **Table 3** to show **two** ways ions are lost from the body.

**[4 marks]**

**Table 3**

| Liquid | Organ |
|---|---|
| _____ | _____ |
| _____ | _____ |

**9 (a) (ii)** How are the ions which are lost from the body replaced?

**[1 mark]**

_____

_____

**Question 9 continues on the next page**

**9 (b)** **In this question you will be assessed on using good English, organising information clearly and using specialist terms where appropriate.**

Reflexes allow humans to respond to stimuli (changes in the environment).

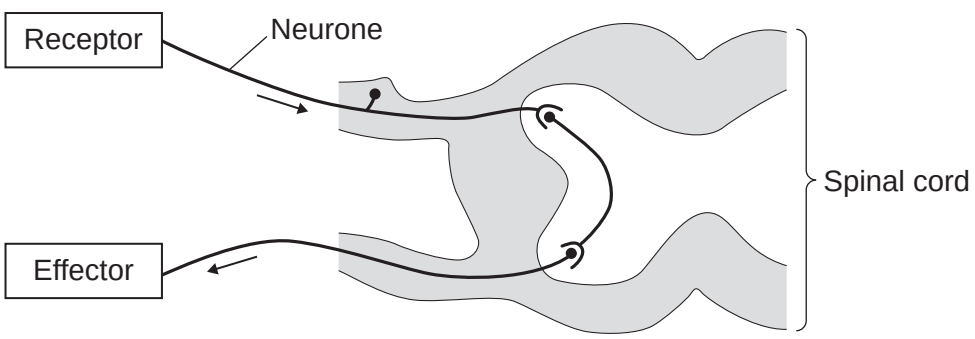
One example of a reflex is when a finger touches a hot kettle and the arm is pulled away.

Sense organs contain receptors that detect stimuli.

Effectors are muscles or glands which respond.

**Figure 9** is a diagram of a simple reflex pathway.

**Figure 9**




Describe how a simple reflex works.

Your answer should include:

- one type of receptor and the stimulus that the receptor detects
- how information is passed from the receptor to the effector.

**[6 marks]**