AQA GCSE BIOLOGY (HIGHER) · 8461

BIOLOGY



EXAM QUESTION PACK

4.5.1 HOMEOSTASIS (PACK 4)

SCORE	PERCENTAGE
/33	%

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Q1.

The concentration of glucose in the blood is controlled by homeostasis.

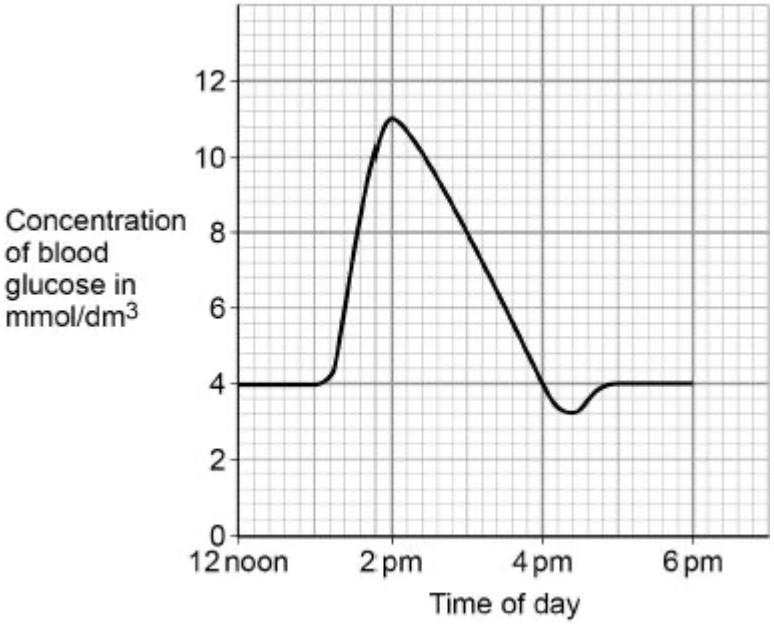
(a) Give **one** other example of an internal condition controlled by homeostasis.

_____

_____

(1)

The graph below shows the change in glucose concentration in the blood of a person with Type 1 diabetes.



(b) Calculate the increase in blood glucose concentration between 1 pm and 2 pm.

_____

_____

Increase in blood glucose = _____ mmol/dm^3

(1)

(c) Suggest at what time the person ate lunch.

Use the graph above.

_____

(1)

(d) Name the hormone the person injected that caused the blood glucose concentration to decrease.

_____

(1)

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(e) Explain the decrease in blood glucose concentration after the hormone was injected.

Use all the words in the box in your explanation.

blood	**cells**	**glucose**	**glycogen**

(2)

(f) Normal blood glucose concentration is approximately 4 mmol/dm^3

What could be the reason for the blood glucose concentration falling below normal at 4 pm?

Tick **one** box.

- The food contained too much glucose ☐
- The person ate another meal ☐
- The person injected too much hormone ☐
- The person fell asleep ☐

(1)

(g) Explain what would happen to the blood glucose concentration if the person went for a run at 6 pm.

(2)

(h) Look at the graph above.

Suggest **one** way that the graph would be different for a person who does not have diabetes.

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(1)

(Total 10 marks)

Q2.

Eukaryotic cells respire continuously to transfer energy.

(a) Give **two** uses of energy transferred by respiration in eukaryotes.

1. _____

2. _____

(2)

(b) Name the cell structure in a eukaryotic cell where aerobic respiration occurs.

_____

(1)

(c) Muscle cells and plant cells can respire anaerobically.

Compare the processes of anaerobic respiration in muscle and plant cells.

_____

_____

_____

_____

_____

_____

_____

_____

(4)

(d) Anaerobic respiration in muscle cells creates an oxygen debt.

What does oxygen debt mean?

_____

_____

(1)

(Total 8 marks)

Q38.

Two common medicines are paracetamol and ibuprofen. These medicines help to reduce high body temperature.

(a) Children who were ill with high body temperatures were identified at doctors' surgeries.

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These children were put into two groups.
The children in each group were matched for age, gender and body mass.

Group 1: 50 children were given paracetamol.

Group 2: 50 children were given ibuprofen.

(i) Give **one** control variable in this investigation.

_____

_____

(1)

(ii) In some investigations when medicines are tested, a placebo is given to one group.

What is a placebo?

_____

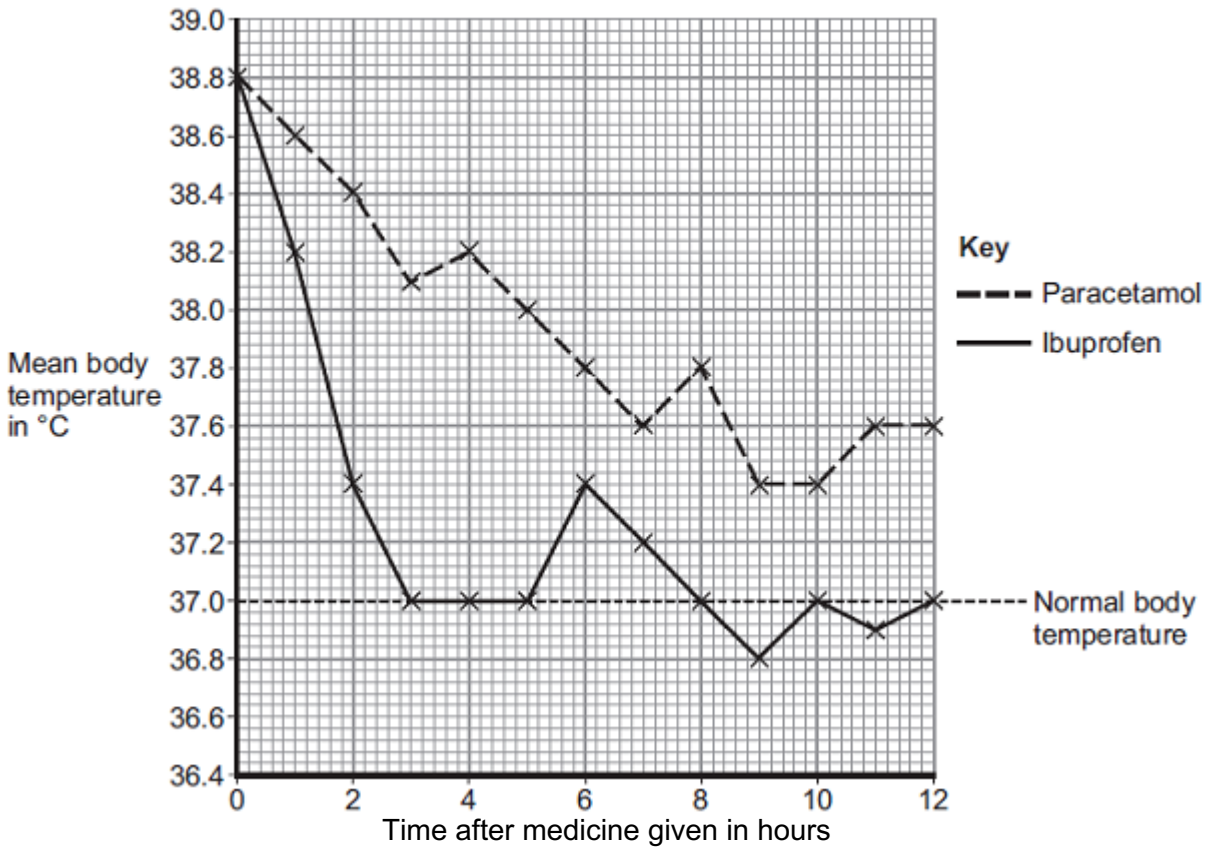
_____

(1)

(b) The children's body temperatures were measured before any medicine was given and every hour after treatment started.

Paracetamol was given every 4 hours. Ibuprofen was given every 6 hours.

The results for the two groups are shown in the figure below.



(i) What was the mean body temperature 4 hours after paracetamol was

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given?

_____ °C

(1)

(ii) Suggest which medicine a parent should give to their child to reduce a high body temperature to normal.

Use information from the graph.

Medicine: _____

Give **two** reasons for your answer.

_____

_____

_____

_____

(2)

(Total 5 marks)

Q39.

Bacteria and viruses can reproduce quickly inside the body and make us feel ill.
These organisms may cause symptoms such as a high body temperature.

(a) How do bacteria and viruses make us feel ill?

_____

_____

(1)

Two common medicines are paracetamol and ibuprofen. These medicines help to reduce high body temperature.

Data was collected to find out whether paracetamol, ibuprofen or a combination of these two medicines was the best to reduce high body temperature in children.

Children who were ill with high body temperatures were identified at doctors' surgeries.

These children were put into three treatment groups:

Group 1: given paracetamol only
Group 2: given ibuprofen only
Group 3: given a combination of paracetamol and ibuprofen

The children in each group were matched for age and gender.

There were 50 children in each group.

The table below shows how often the medicines were given to the children in each group.
The doses were as directed by the manufacturers.

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	Time in hours						
	0	2	4	6	8	10	12
Group 1: Paracetamol only	P		P		P		P
Group 2: Ibuprofen only	I			I			I
Group 3:Paracetamol and ibuprofen	P&I		P	I	P		P&I

Key: P = paracetamol only
I = ibuprofen only
P&I = paracetamol and ibuprofen

(b) This investigation would have been improved if a fourth group of children had been included.

(i) The children in each group were matched for age and gender.

Suggest **one** other factor the children should have been matched for to make this investigation valid.

_____

(1)

(ii) What would the children in the fourth group have been given?

_____

_____

(1)

(iii) Suggest why this would have improved the investigation.

_____

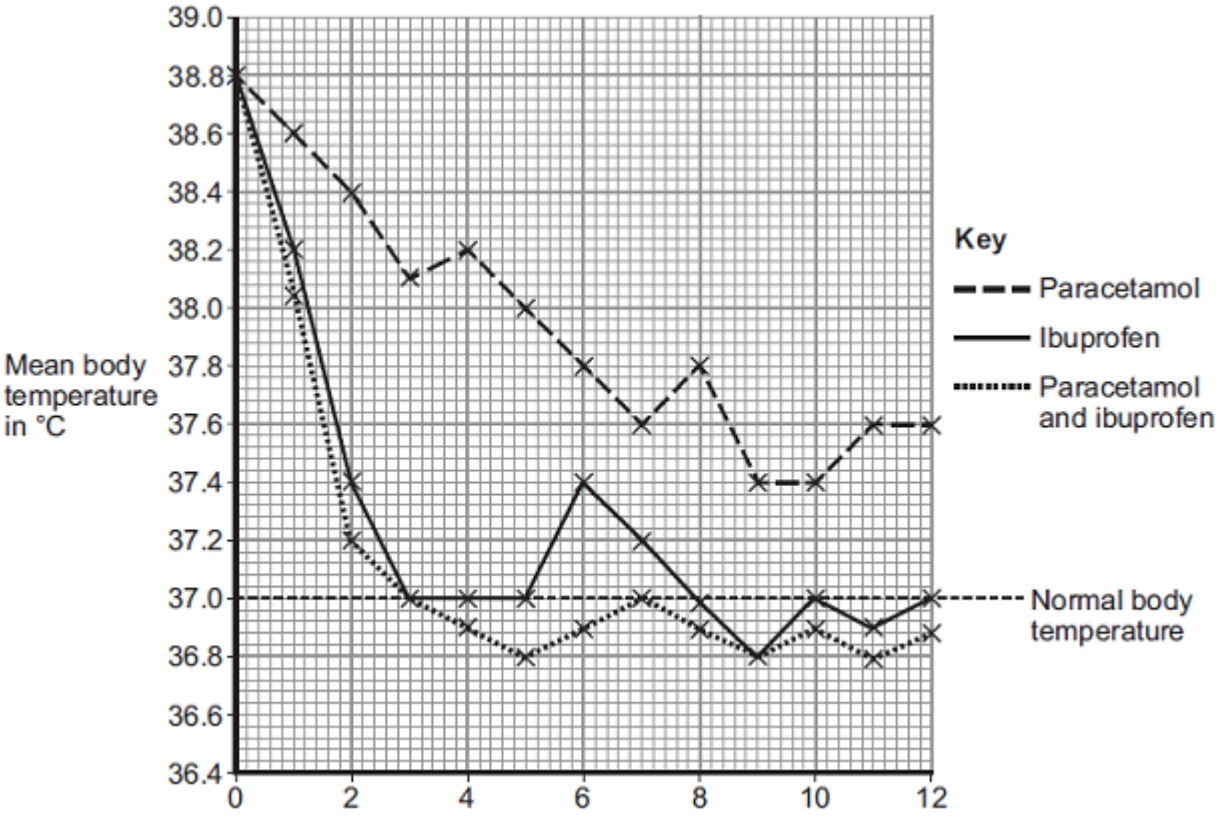
_____

(1)

(c) The children's body temperatures were measured before any medicine was given and every hour after treatment started.

The mean body temperatures for each of the three groups are shown in the figure below.

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(i) What was the difference in mean body temperature after 4 hours between the group taking paracetamol only and the group taking ibuprofen only?

_____

_____ °C

(1)

(ii) How many more hours did the mean body temperature stay normal or below normal, when taking both paracetamol and ibuprofen compared to taking ibuprofen only?

_____

_____ hours

(1)

(d) Doctors and nurses usually advise parents to give ibuprofen to children with a high body temperature.

Complete the sentences to suggest reasons why giving only ibuprofen might be better than giving only paracetamol or a combination of paracetamol and ibuprofen. You should use information from the table and the figure.

(i) Giving ibuprofen might be better than giving paracetamol because

_____

_____

_____

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_____

_____

(2)

(ii) Giving only ibuprofen might be better than giving a combination of paracetamol

and ibuprofen because _____

_____

_____

_____

_____

(2)

(Total 10 marks)

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