

Past-paper walk-through

Hormones ■ 14.3

eXercise

Questions in this set

- 0610/22 N25 Q20 ■ 1 mark
- 0610/23 N25 Q23 ■ 1 mark
- 0610/23 N25 Q24 ■ 1 mark
- 0610/21 J25 Q23 ■ 1 mark
- 0610/22 J25 Q25 ■ 1 mark
- 0610/23 J25 Q25 ■ 1 mark
- 0610/43 J25 Q3 ■ 12 marks

Reading the mark scheme

- **B1** a mark that stands on its own – the point is either made or not.
- **M1** a *method* mark: the right approach, even if the number is wrong.
- **A1** an *answer* mark, and it usually needs its M mark first.
- **C1** a working mark on the way to the answer.
- **//** separates answers the examiner accepts equally.
- **ecf** = error carried forward: a later part is marked on your own earlier answer.
- **owtte** = “or words to that effect” – the wording need not match.

Question 20

0610/22 N25 ■ Q20 ■ 1 mark

20 Which effect does adrenaline have on blood glucose concentration and pulse rate?

	blood glucose concentration	pulse rate
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

Solution 20

Answer: **D**

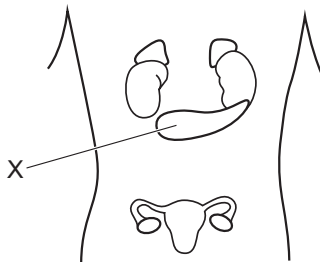
Why

- Adrenaline prepares the body for vigorous action.
- It makes the liver release glucose, so blood glucose rises.
- It also speeds the heart, so the pulse rate rises.

Question 23

0610/23 N25 ■ Q23 ■ 1 mark

23 The diagram shows the position of some of the human endocrine glands.



Which hormone is secreted by X?

Question 23

.....,

- A** adrenaline
- B** insulin
- C** oestrogen
- D** testosterone

Solution 23

Answer: **B**

Why

- The pancreas lies just below and behind the stomach.
- It secretes insulin and glucagon into the blood.
- Adrenaline comes from the adrenal glands on the kidneys, and the sex hormones from the gonads.

Question 24

0610/23 N25 ■ Q24 ■ 1 mark

24 Which row shows the correct speed and duration for the type of control?

	type of control	speed of action	duration of effect
A	hormonal	fast	short
B	hormonal	slow	long
C	nervous	fast	long
D	nervous	slow	short

Solution 24

Answer: **B**

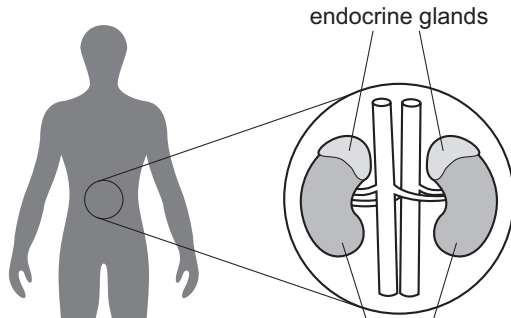
Why

- Nervous control uses electrical impulses, so it is very fast but the effect is brief.
- Hormonal control uses chemicals carried in the blood, so it is slower.
- But a hormone persists in the blood, so its effect lasts much longer.

Question 23

0610/21 J25 ■ Q23 ■ 1 mark

23 The diagram shows the positions of two endocrine glands in the human body.



Question 23



kidneys

What is a response of the body to the hormone released from these glands?

- A** a decrease in heart rate
- B** a decrease in blood glucose concentration
- C** an increase in pupil diameter

D the development of secondary sexual characteristics

Solution 23

Answer: **C**

Why

- Glands sitting on top of the kidneys are the adrenal glands.
- They release adrenaline, which prepares the body for action.
- That means a faster heart rate, wider pupils and more glucose released – not a decrease.

Question 25

0610/22 J25 ▪ Q25 ▪ 1 mark

25 Which organ produces glucagon?

A adrenal gland

B liver

C ovary

D pancreas

Solution 25

Answer: **D**

Why

- Glucagon is made in the pancreas, by the same islets that make insulin.
- It acts *on* the liver, making it convert glycogen back into glucose.
- So the pancreas produces it and the liver responds to it.

Question 25

0610/23 J25 ■ Q25 ■ 1 mark

25 Which hormones increase the blood glucose concentration in humans?

- A** adrenaline and glucagon
- B** adrenaline and insulin
- C** glucagon only
- D** insulin only

Solution 25

Answer: **A**

Why

- Glucagon makes the liver convert glycogen back into glucose, raising blood glucose.
- Adrenaline does the same thing, mobilising glucose for action.
- Insulin does the opposite – it lowers blood glucose.

Question 3

0610/43 J25 ■ Q3 ■ 12 marks

- 3 (a)** Complete the sentences about the control of blood glucose concentration.

Blood glucose concentration increases after a person eats a meal containing carbohydrates.

Question 3

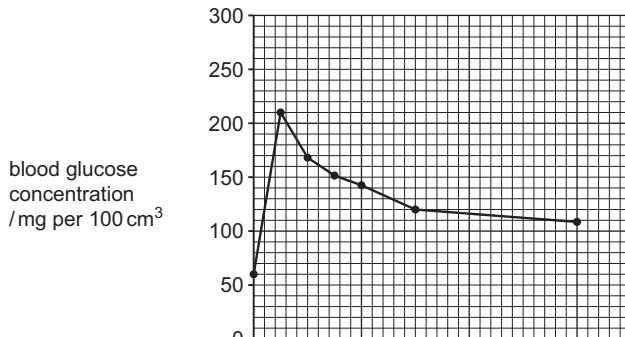
[4]

(b) Outline the treatment of type 1 diabetes.

Question 3

- (c) A scientist investigated the effect of an injection of glucose solution on blood glucose concentration in healthy people. The injection was given at 0 minutes.

Fig. 3.1 shows the results.



Question 3

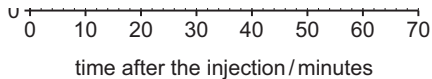


Fig. 3.1

Calculate the percentage change in the blood glucose concentration from 5 minutes after the injection to 30 minutes after the injection.

Give your answer to **two** significant figures.

Space for working.

Question 3

(d) Adrenaline also affects blood glucose concentration.

Suggest how this is an advantage for the “fight or flight” response.

Question 3

[Total: 12] _

Solution 3

(a) Mark scheme

- pancreas ;
- liver ;
- glycogen ;
- negative feedback / homeostasis ;
- 4
- 0610/43
- May/June 2025
- Guidance

Solution 3

(b) Mark scheme

- any two from:
- 1
- monitoring blood glucose ;
- 2
- insulin, injections / pump ;
- 3
- artificial pancreas ;
- 4

Solution 3

- counting carbohydrates (in diet) ;
- 5
- matching, food / carbohydrate, intake to activity ;
- 6
- keeping a healthy weight ;
- 7
- pancreas / islet cell, transplant ;
- 8
- AVP ;
- 2

Solution 3

- e.g. consuming, sugar / glucose, if blood,
- glucose is low / AW

Solution 3

(c) Mark scheme

- $(-)\text{43}(\%)$;;;
- 3 MP1 correct readings from graph
- 210 and 120 mg per 100 cm³
- MP2 correct calculation to any number of
- significant figures e.g. $(-)\text{42.857}(\%)$
- MP3 correct rounding to two significant
- figures
- ecf from previous step

Solution 3

(d) Mark scheme

- any three from:
- 1
- (adrenaline) causes the, breakdown / conversion, of, glycogen / stored
- carbohydrate ;
- 2
- increasing (blood) glucose concentration ;
- 3
- glucose used in respiration releasing energy ;

Solution 3

- 4
- energy used for muscle contraction ;
- 5
- AVP ;
- 3
- e.g. increased glucose uptake by cells
- Guidance