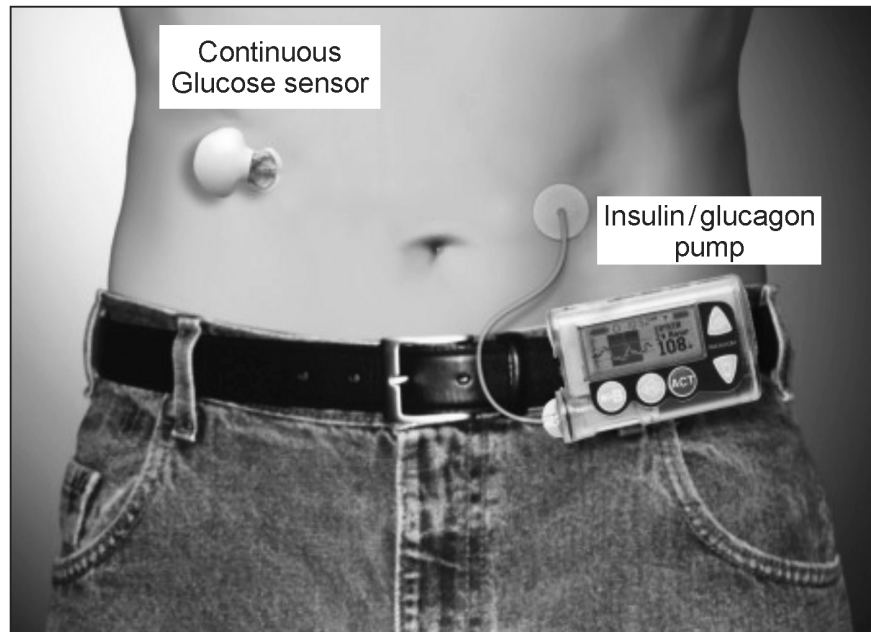


WJEC (Eduqas) Biology GCSE
Topic 4.2 Hormonal Co-
ordination and Control in
Humans
Questions by Topic

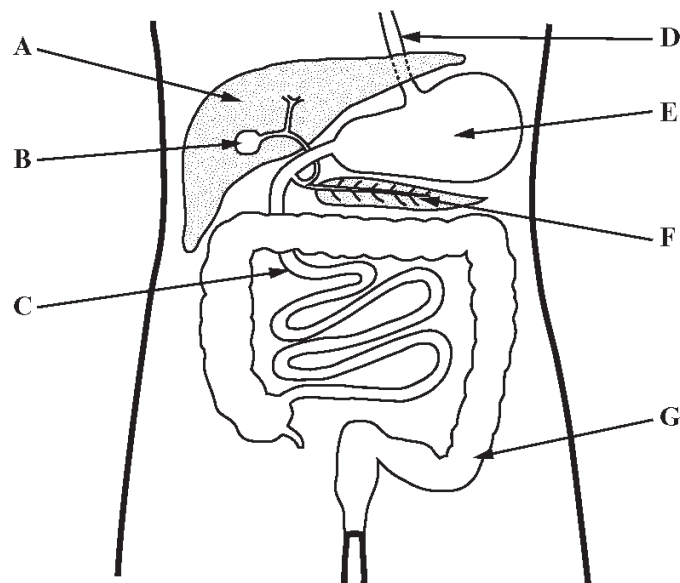
1. In 2014, scientists developed a new treatment for diabetes involving a smartphone app. Every five minutes, a wireless signal is sent from a glucose sensor under the user's skin to the app. The app then calculates the dose of insulin or glucagon needed to balance the blood glucose level. It then sends a signal to a hormone supply carried by the user to pump the required dose via a tube into the blood. This maintains the body's normal negative feedback mechanism.



(a) Which gland in the body is replaced by this treatment?

[1]

2. (b) The diagram below shows part of the digestive system in the human body.



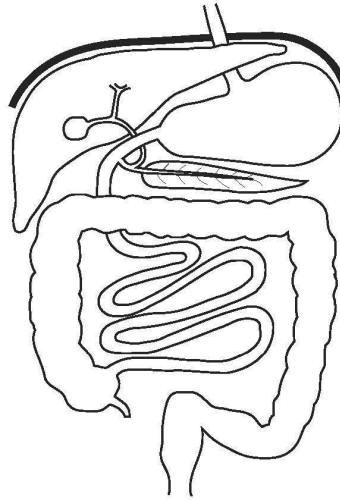
From the diagram opposite.

(i) Give the letters which show

[1]

I. the pancreas,

3. The diagram below shows part of the human digestive system.

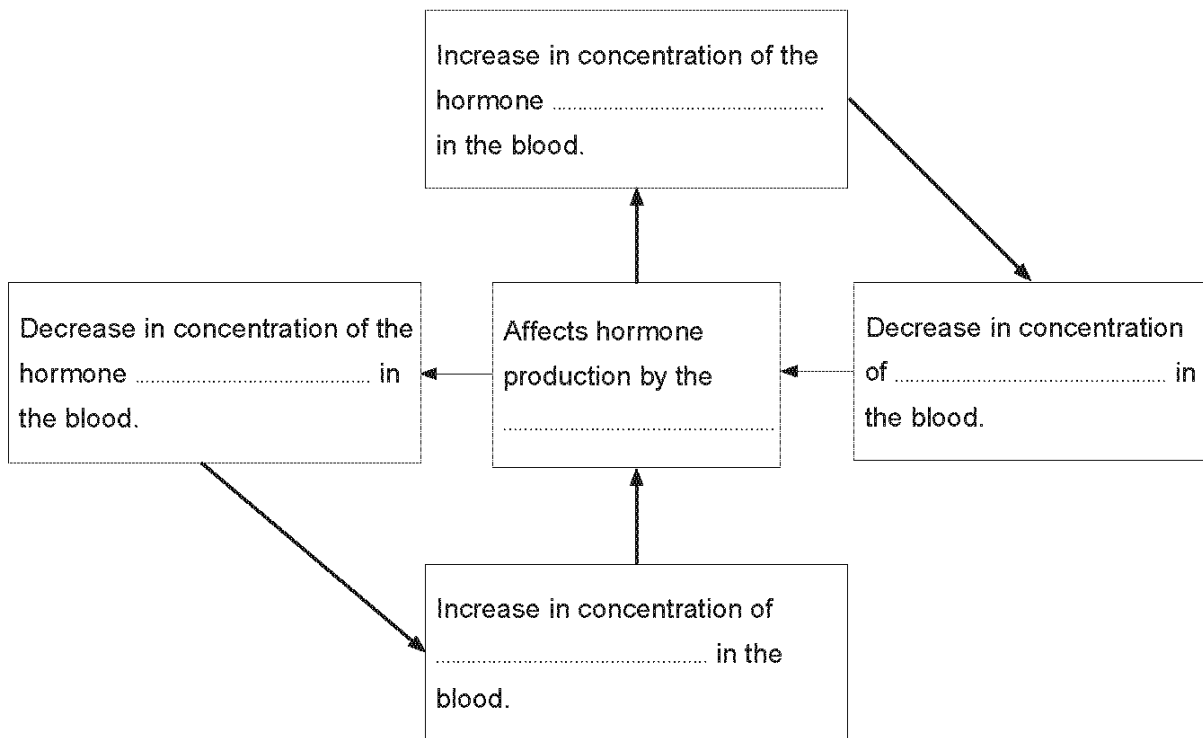


(a) On the diagram above label the following: [1]

A pancreas
B bile duct

4. The principles of negative feedback can be summarised by the flow chart shown below.

(a) Fill in the blank spaces to show how the source of energy in the blood is maintained at a constant concentration. [5]

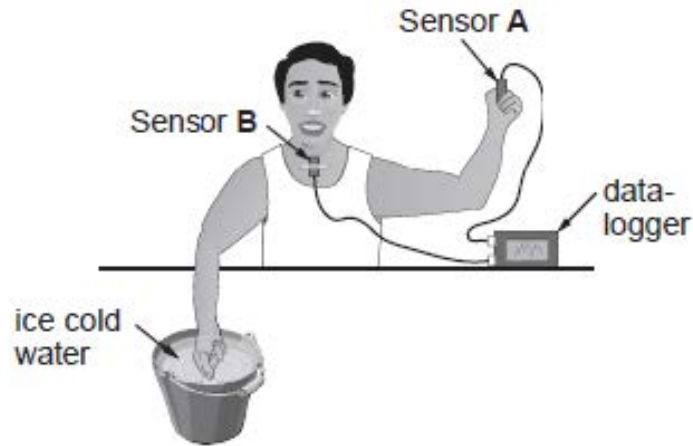


(b) State two features of hormones shown in the flow chart. [2]

- I
- II

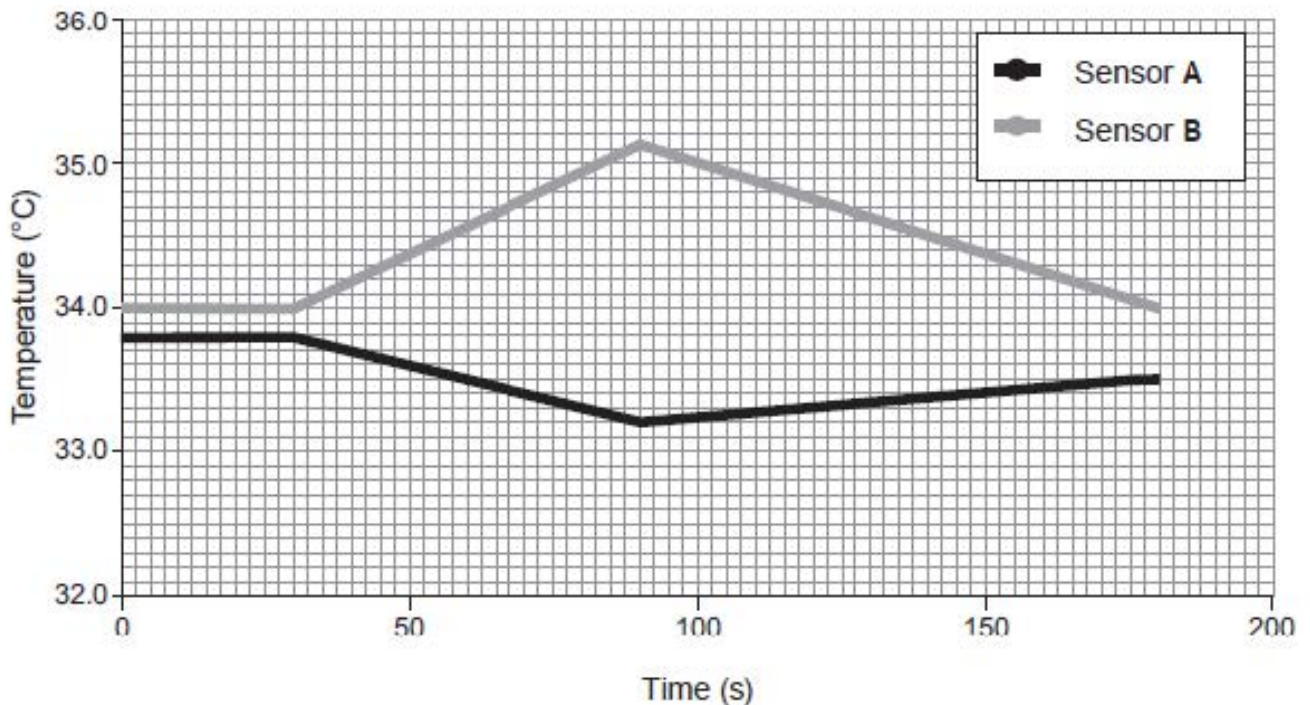
5. Dylan set up an experiment to study negative feedback mechanisms associated with rapid cooling of the hand.

A temperature sensor was held between the fingertips of a volunteer and another sensor was taped to the skin on the upper chest. The sensors were connected to a data logger that was set to record for three minutes.



The volunteer placed their right hand into ice cold water 30 seconds after the recording started. The hand was then removed from the ice cold water after a further 30 seconds.

The results from the data logger are shown below:



(a) State what is meant by a negative feedback mechanism.

[2]

.....

.....

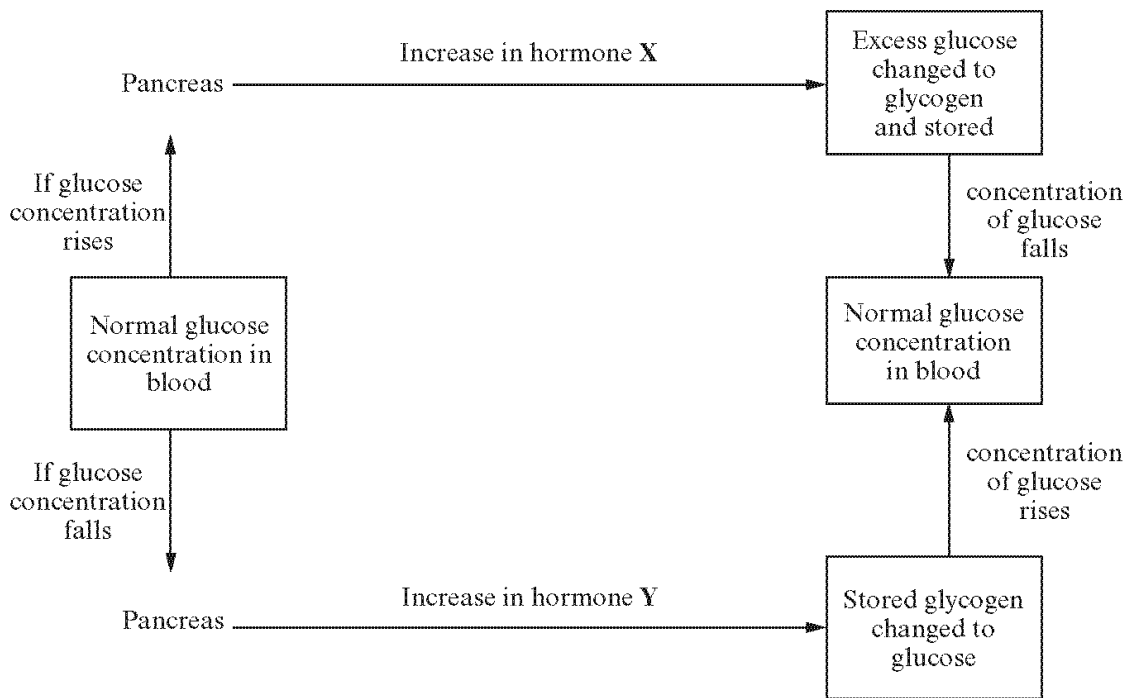
.....

(b) (i) Describe the results for sensor A after the hand was placed in the ice cold water. [1]

.....

6.

It is important to keep the concentration of glucose in the blood constant. The flow diagram shows how this happens.



Insulin has an important role in the control of blood glucose.

(a) What type of substance is insulin? [1]

Underline the correct answer:

- fat
- hormone
- nutrient

(b) Use your knowledge to complete the following sentences about the control of blood glucose. [3]

As blood glucose level rises, insulin is released from the

.....

The insulin travels in the blood to the liver.

The liver then converts the excess into an insoluble form

called

(c) Some people have a medical condition in which they cannot control their blood glucose. State the name of the condition and describe one method of treating it. [2]

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