AQA GCSE Biology | 8461

SPECIFICATION POINT 4.5.3.1

Human endocrine system

Past-paper questions

Tier	**Higher**
Question groups	**13**
Available paper years	**2007–2025**

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.

4.5.3.1 Human endocrine system

Question 01

June 2007 | BLY1A | Original Q2 | Legacy

QUESTION TWO

Hormones are involved in the menstrual cycle.

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

A FSH

B FSH and LH

C LH

D oestrogen

	Function
1	stimulates egg release only
2	stimulates and inhibits production of hormones by the pituitary gland
3	stimulates the ovary to produce hormones and stimulates eggs to mature in the ovaries
4	the usual hormone treatment used in IVF treatment

4.5.3.1 Human endocrine system

Question 02

June 2007 | BLY1H | Original Q5 | Legacy

5 A woman's fertility can be controlled by using hormones.

(a) Some contraceptive pills contain oestrogen.

Name the gland which produces oestrogen.

.....

(1 mark)

Women are being encouraged to use longer-term methods of contraception to reduce their chances of having an unwanted pregnancy.

The table summarises four long-term methods of contraception.

Method	What it is	How it works	How long does it last?	Chances of getting pregnant	Side effects
Hormone implant	Rod containing slow-release hormone inserted under the skin	Stops ovaries releasing eggs	3 years	Less than 1 in 1000	Acne in some women
Hormone injection	Injection that slowly releases hormone	Stops ovaries releasing eggs	12 weeks	Less than 4 in 1000	Weight gain in some women
IUD	Small plastic and copper coil placed in womb	Stops fertilised eggs developing in womb	5 – 10 years	Less than 20 in 1000	Heavier or more painful periods in some women
IUS	Plastic device containing slow-release hormone placed in womb	Stops fertilised eggs developing in womb	5 years	Less than 10 in 1000	Irregular periods in some women

(b) Which of the methods in the table is the most reliable?

.....

(1 mark)

4.5.3.1 Human endocrine system

Question 02 · continued

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(c) What is the advantage of using long-term contraception methods instead of taking a contraceptive pill every day?

.....

.....

(1 mark)

(d) The IUD is the least reliable of the contraceptive methods shown in the table.

Use information from the table to suggest a reason for this.

.....

.....

(1 mark)

(e) Some people have ethical objections to the use of an IUD or an IUS.

Suggest **one** reason why people might object to their use.

.....

.....

(1 mark)

(f) (i) Explain how the hormone in the implants prevents the ovary releasing eggs.

.....

.....

.....

.....

(2 marks)

(ii) Hormones can also be used as 'fertility drugs'.

Explain how a fertility drug helps a woman to become pregnant.

.....

.....

.....

.....

(2 marks)

9

4.5.3.1 Human endocrine system

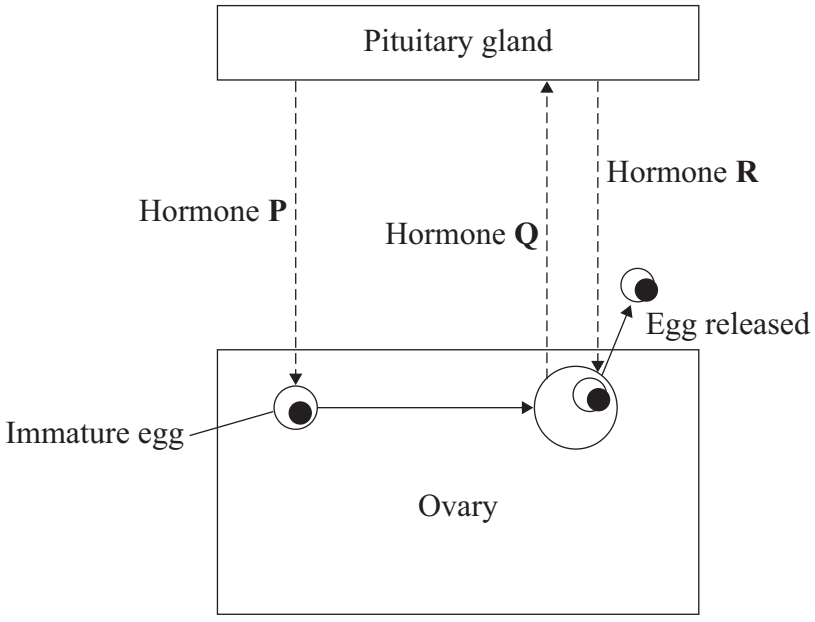
Question 03

June 2008 | BLY1AP | Original Q7 | Legacy

QUESTION SEVEN

Hormones produced in the body control the menstrual cycle.

The diagram shows how some hormones are involved in controlling the menstrual cycle.



7A Which line correctly identifies hormones **P**, **Q**, and **R**?

	P	**Q**	**R**
1	FSH	oestrogen	LH
2	LH	oestrogen	FSH
3	FSH	LH	oestrogen
4	oestrogen	FSH	LH

7B Oral contraceptives contain hormones that . . .

1 inhibit FSH production.

2 stimulate LH production.

3 prevent sperm cells from fertilising.

4 stimulate the pituitary gland to release more oestrogen.

4.5.3.1 Human endocrine system

7C Fertility drugs involve the use of . . .

1 FSH to stimulate eggs to mature.

2 LH to stimulate oestrogen production.

3 FSH to stimulate the release of eggs.

4 oestrogen to stimulate LH production.

7D IVF treatment usually involves giving a woman . . .

1 FSH only.

2 oestrogen only.

3 LH and oestrogen.

4 FSH and LH.

Turn over for the next question

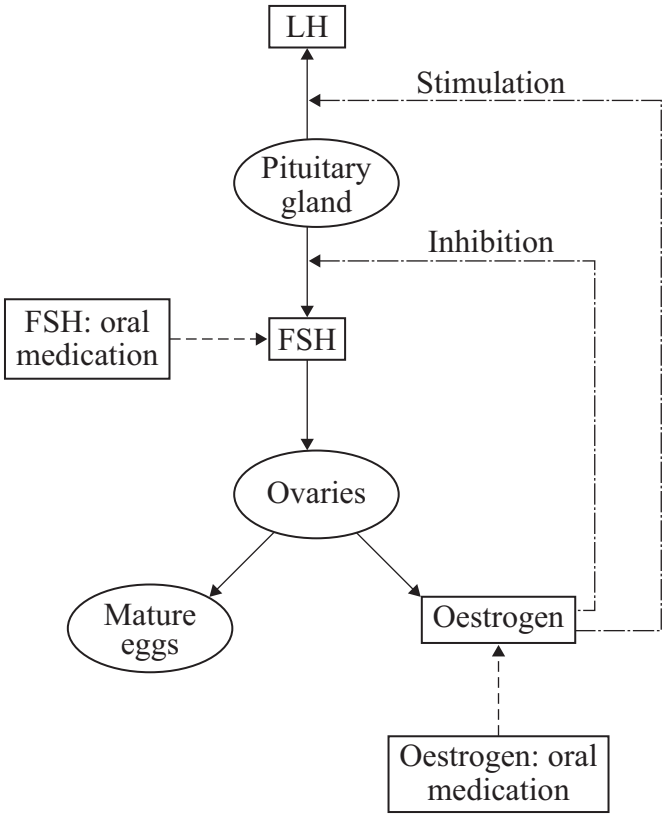
4.5.3.1 Human endocrine system

Question 04

November 2009 | BLY1AP | Original Q9 | Legacy

QUESTION NINE

The diagram shows hormones involved in the control of the menstrual cycle and fertility.



9A A woman takes pills containing oestrogen.

The effect of this will be to . . .

1 encourage the production of more oestrogen by the ovaries.

2 increase the likelihood of pregnancy by encouraging the production of LH.

3 inhibit FSH production and stimulate eggs to mature.

4 inhibit FSH production and so inhibit the maturation of eggs.

4.5.3.1 Human endocrine system

9B A woman takes pills containing FSH.

The effect of this will be to . . .

1 stimulate the maturation of eggs.

2 inhibit the maturation of eggs.

3 reduce oestrogen production.

4 reduce LH production.

9C To assist the release of several eggs, a woman should be treated with medication containing . . .

1 FSH only.

2 FSH and LH.

3 oestrogen only.

4 oestrogen and FSH.

9D Which one of the following is based on scientific rather than ethical considerations in relation to IVF procedures?

1 Unused but fertile eggs should be destroyed.

2 The number of eggs collected should give the best chance of success.

3 The sex of the embryo which is to be implanted should be chosen by parents.

4 Single mothers should be offered IVF treatment.

END OF TEST

4.5.3.1 Human endocrine system

Question 05

June 2010 | BLY1AP | Original Q1 | Legacy

QUESTION ONE

The menstrual cycle is controlled by hormones.

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

A embryo

B ovary

C pituitary gland

D womb

	Information
1	produces eggs
2	produced when a fertilised egg divides
3	produces the hormone FSH
4	its lining is thickened by the action of a hormone

4.5.3.1 Human endocrine system

Question 06

March 2011 | BLY1AP | Original Q1 | Legacy

QUESTION ONE

We control conditions inside our bodies.

Match organs, **A**, **B**, **C** and **D**, with the statements **1**–**4** in the table.

A liver

B pituitary gland

C kidney

D skin

1	produces the hormone FSH
2	gets rid of excess heat
3	removes excess water from the blood
4	produces cholesterol

4.5.3.1 Human endocrine system

Question 07

June 2011 | BLY1AP | Original Q1 | Legacy

QUESTION ONE

This question is about human organs.

Match organs, **A**, **B**, **C** and **D**, with the functions **1**–**4** in the table.

A kidney

B liver

C ovary

D pituitary gland

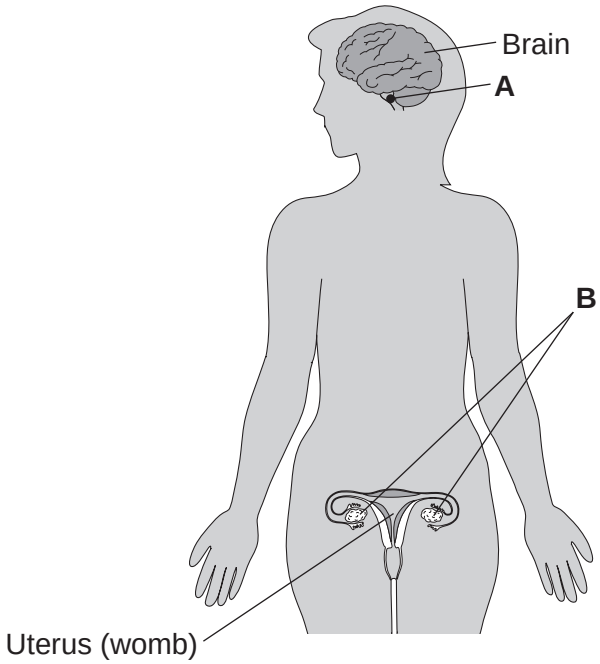
	Function
1	produces cholesterol
2	produces FSH
3	produces oestrogen
4	produces urine

4.5.3.1 Human endocrine system

Question 08

January 2013 | BL1HP | Original Q2 | Legacy

2 The diagram shows the position of two glands, **A** and **B**, in a woman.



2 (a) (i) Name glands **A** and **B**.

A .....

B .....

(2 marks)

2 (a) (ii) Gland **A** produces the hormone Follicle Stimulating Hormone (FSH).

FSH controls changes in gland **B**.

How does FSH move from gland **A** to gland **B**?

.....

(1 mark)

Question 2 continues on the next page

4.5.3.1 Human endocrine system

Question 08 · continued

2 (b) (i) A woman is not able to become pregnant. The woman does not produce mature eggs. The woman decides to have In Vitro Fertilisation (IVF) treatment.

Which **two** hormones will help the woman produce and release mature eggs?

Tick (✓) **one** box.

FSH and Luteinising Hormone (LH) ☐

FSH and oestrogen ☐

Luteinising Hormone (LH) and oestrogen ☐

(1 mark)

2 (b) (ii) Giving these hormones to the woman helps her to produce several mature eggs. Doctors collect the mature eggs from the woman in an operation.

Describe how the mature eggs are used in IVF treatment so that the woman may become pregnant.

.....

.....

.....

.....

.....

.....

(3 marks)

2 (b) (iii) IVF clinics have been set a target to reduce multiple births.

> At least 76% of IVF treatments should result in single babies and a maximum of 24% of treatments should result in multiple births.

Suggest **one** reason why the clinics have been set this target to reduce multiple births.

.....

.....

(1 mark)

4.5.3.1 Human endocrine system

Question 08 · continued

2 (c) Two clinics, **R** and **S**, used IVF treatment on women in 2007. Doctors at each clinic used the results of the treatments to predict the success rate of treatments in 2008.

The table shows the information.

	Total number of IVF treatments in 2007	Number of IVF treatments resulting in pregnancy in 2007	Predicted percentage success rate in 2008
Clinic **R**	1004	200	18 – 23
Clinic **S**	98	20	3 – 56

2 (c) (i) Compare the success rates of the two clinics in 2007.

.....

.....

(1 mark)

2 (c) (ii) The range of the predicted success rate in 2008 for clinic **R** is much smaller than the range of the predicted success rate for clinic **S**.

Suggest why.

.....

.....

.....

.....

(2 marks)

11

4.5.3.1 Human endocrine system

Question 09

June 2019 | 8461/2H | Original Q6

0 6 Water conservation is important to the human body.

0 6 . 1 Which gland releases the hormone that controls water loss from the body?

[1 mark]

Tick (✓) **one** box.

- Adrenal ☐
- Pancreas ☐
- Pituitary ☐
- Thyroid ☐

0 6 . 2 Which hormone helps the kidneys to control water loss from the body?

[1 mark]

Tick (✓) **one** box.

- ADH ☐
- Adrenaline ☐
- LH ☐
- Thyroxine ☐

4.5.3.1 Human endocrine system

Question 09 · continued

0 6 . 3 A man is walking across a desert.

The man has used up his supply of drinking water.

Explain how the gland you named in Question **06.1** and the kidneys reduce water loss.

[3 marks]

Question 6 continues on the next page

4.5.3.1 Human endocrine system

Question 09 · continued

0 6 . 4 Some people have kidney failure.

Doctors may treat patients with kidney failure by either:

- dialysis
- a kidney transplant.

Explain **two** biological reasons why most doctors think that a kidney transplant is a better method of treatment than dialysis.

Do **not** refer to cost or convenience.

[4 marks]

Reason 1 _____

_____

_____

_____

Reason 2 _____

_____

_____

_____

9

4.5.3.1 Human endocrine system

Question 10

November 2021 | 8461/2H | Original Q6

0 6 Reflex actions are coordinated by the nervous system.

0 6 . 1 What is meant by the term 'reflex action'?

[2 marks]

0 6 . 2 A woman's hand accidentally touches a hot object.

The woman moves her hand away rapidly.

Describe how the woman's nervous system coordinates the reflex action.

[6 marks]

4.5.3.1 Human endocrine system

Question 10 · continued

0 6 . 3 The endocrine system coordinates many internal functions of the body.

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

[3 marks]

1 _____

2 _____

3 _____

0 6 . 4 Describe how hormones control the menstrual cycle.

[5 marks]

16

4.5.3.1 Human endocrine system

Question 11

June 2023 | 8461/2H | Original Q5

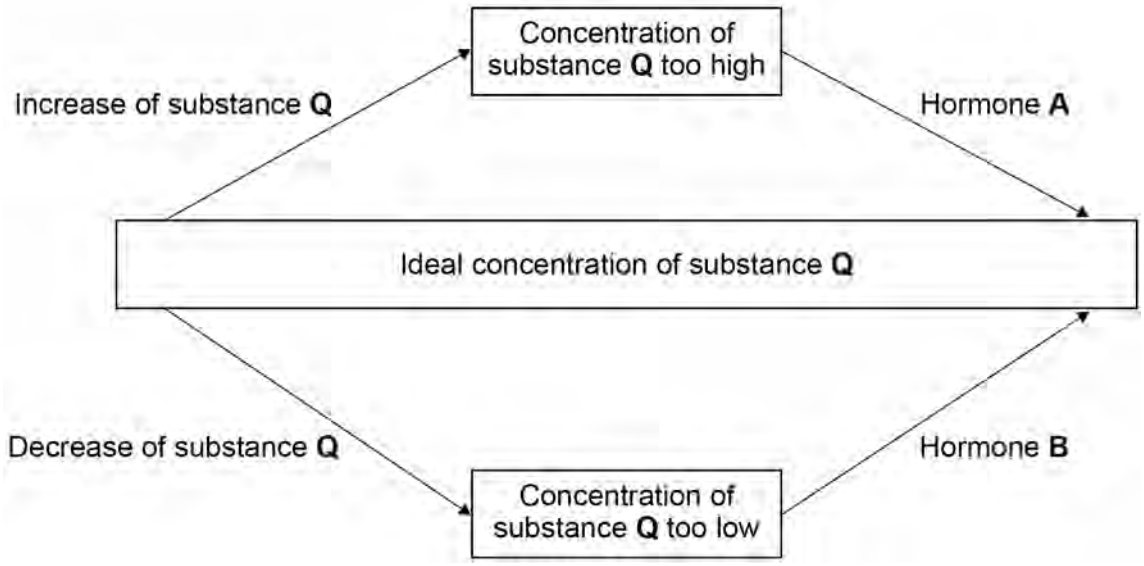
0 5 Homeostasis is the regulation of the body's internal conditions.

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]

4.5.3.1 Human endocrine system

Question 11 · 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

4.5.3.1 Human endocrine system

Question 11 · 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

4.5.3.1 Human endocrine system

Question 12

June 2024 | 8461/2H | Original Q5

0 5 The human body has two coordination systems:

- the nervous system
- the endocrine system.

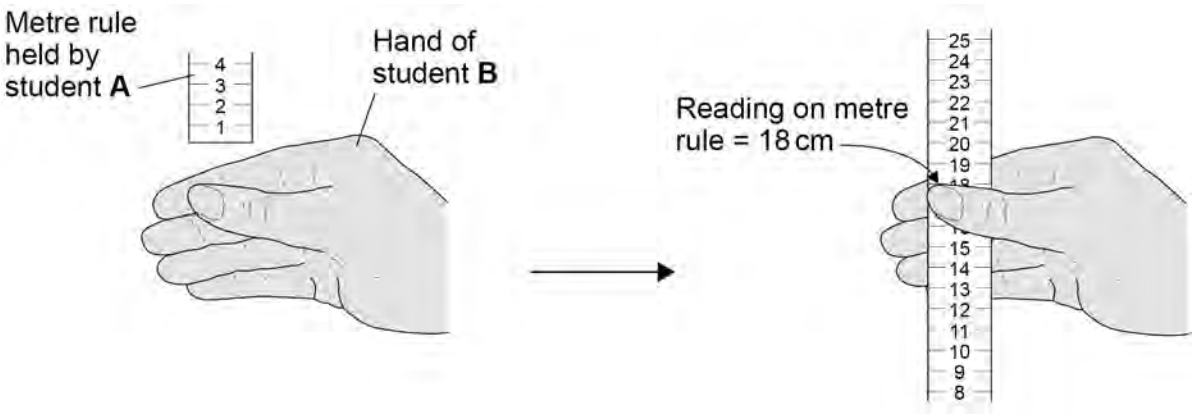
0 5 . 1 Two students investigated human reaction time.

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 _____

_____

4.5.3.1 Human endocrine system

Question 12 · 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 _____

_____

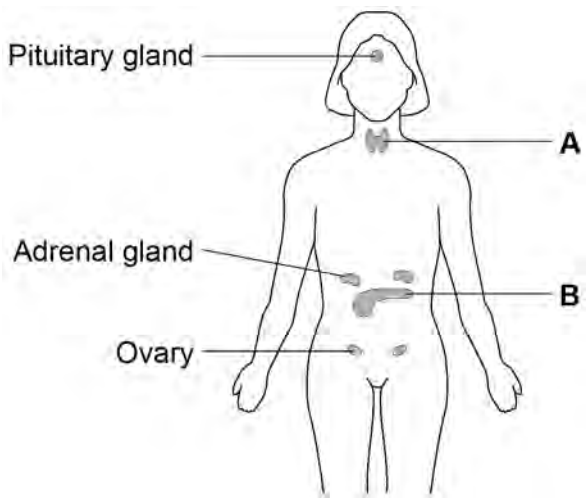
Question 5 continues on the next page

4.5.3.1 Human endocrine system

Question 12 · 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 _____

_____

4.5.3.1 Human endocrine system

Question 12 · 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]

14

4.5.3.1 Human endocrine system

Question 13

June 2025 | 8461/2H | Original Q4

0 4 Human growth hormone (hGH) is made by the pituitary gland.

0 4 . 1 Name **one other** hormone made by the pituitary gland.

[1 mark]

0 4 . 2 hGH is a protein.

A child with a deficiency of hGH can be given injections of hGH.

What would happen to the hGH if it was given as a tablet that was swallowed?

[1 mark]

Question 4 continues on the next page

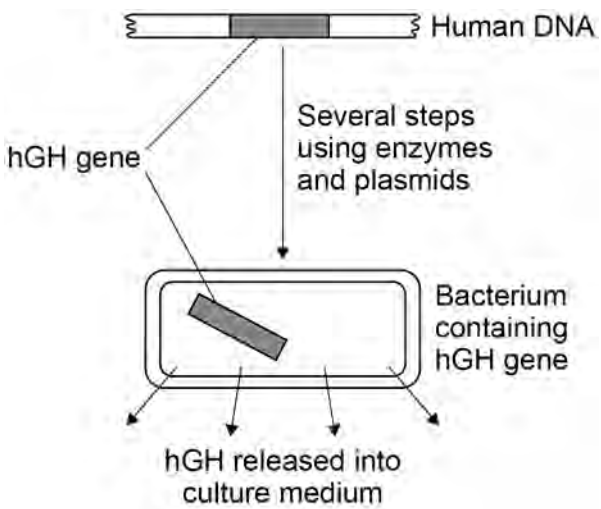
4.5.3.1 Human endocrine system

Question 13 · continued

Scientists can use genetic engineering to make hGH.

Figure 4 shows a summary of the process.

Figure 4



0 4 . 3 Describe how scientists can transfer the gene for hGH from human cells to bacterial cells.

Use information from **Figure 4**.

[4 marks]

Extra space

4.5.3.1 Human endocrine system

Question 13 · continued

0 4 . 4 Growth hormone (GH) can be extracted from the urine of farm animals.

It is better to use hGH made by genetic engineering than to use GH from the urine of farm animals.

Suggest **two** reasons why.

Do **not** refer to ethical reasons or religious beliefs in your answer

[2 marks]

1 _____

_____

2 _____

_____

8

Turn over for the next question