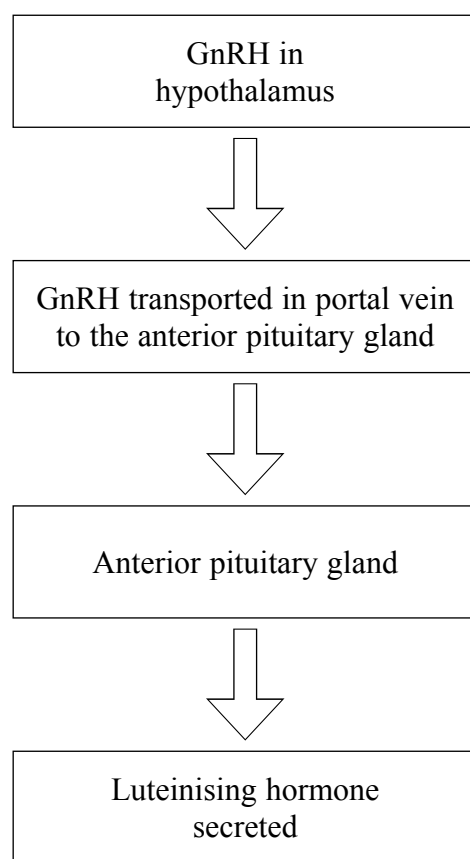


Answer Questions 1 and 2 in the spaces provided.

1. (a) Luteinising hormone (LH) is secreted by the anterior pituitary gland. The secretion of luteinising hormone is stimulated by another hormone, gonadotrophin-releasing hormone (GnRH), which is secreted by the hypothalamus. Luteinising hormone is transported to its target organ in the bloodstream.

The flow diagram below shows the sequence of events involved in the secretion of luteinising hormone.



- (i) Give **two** functions of **luteinising hormone (LH)**.

1

2

(2)

- (ii) Suggest the process by which gonadotrophin-releasing hormone is secreted by cells in the hypothalamus.

.....

(1)



Leave blank

(iii) Some hormones exert feedback and inhibit the secretion of GnRH by the hypothalamus. Name this type of feedback.

.....
(1)

(iv) Suggest how the transport of gonadotrophin-releasing hormone from the hypothalamus differs from the transport of luteinising hormone to its target organ.

.....
.....
.....
.....
.....
(2)

(b) The table below shows the concentrations of the hormones oestrogen and progesterone in the blood of a pregnant woman, from 5 weeks until one week before birth.

Weeks before birth	Concentration of oestrogen in the blood / ng cm^{-3}	Concentration of progesterone in the blood / ng cm^{-3}
5	10.0	160.0
4	11.8	141.0
3	14.5	135.0
2	16.0	121.0
1	18.5	104.0

Using the data in the table, compare the changes in the concentrations of oestrogen and progesterone.

.....
.....
.....
.....
(2)

(Total 8 marks)

Q1



2. (a) Explain what is meant by each of the following terms.

(i) Saprobiontic nutrition

.....
.....
.....
.....
.....

(2)

(ii) Parasitic nutrition

.....
.....
.....
.....
.....

(2)

(b) Aphids are small insects that are pests of many crops, such as cereal and bean plants. Aphids have a number of predators, including ladybirds and lacewings. Ladybirds are beetles with conspicuous bright colours. Native species of ladybirds in the United Kingdom include the 7-spot and the 2-spot ladybirds. Some species of ladybirds and their larvae are used as agents of biological control of glasshouse pests.



An aphid
Magnification $\times 10$



Leave
blank

(i) Suggest why aphids are considered to be pests of crop plants.

.....

.....

.....

.....

.....

.....

.....

.....

.....

(3)

(ii) Explain what is meant by the term **biological control**.

.....

.....

.....

.....

.....

.....

.....

(2)

QUESTION 2 CONTINUES ON THE NEXT PAGE



Leave
blank

- (c) In 2004, a species of ladybird, known as the harlequin ladybird, appeared in the United Kingdom. This species, originally from Asia, spread to parts of Europe and North America, but was previously unrecorded in the UK. Harlequin ladybirds reproduce rapidly and eat aphids and other insects. Surveys are regularly carried out in the UK to estimate the population density of the different ladybird species.



Magnification $\times 5$

A harlequin ladybird

- (i) Suggest a method for estimating the population density of ladybirds.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(3)



Leave
blank

(ii) The table below shows some of the data collected in the United Kingdom Ladybird Survey. The figures in the table show the percentage of each species recorded, for the years 2005 and 2006.

Species of ladybird	Percentage of each species (%)	
	2005	2006
Harlequin	16	55
7-spot	25	14
2-spot	22	11

Use the data in the table to compare the changes in the percentages of each species in 2005 with 2006. Suggest a reason for the changes you have described.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(3)

Q2

(Total 15 marks)



Write an essay on ONE of the following topics.

For Biology you should choose EITHER Question 3 OR Question 4B.

3. The structure of DNA and the production of genetically modified organisms. (15 marks)

4B. The uptake, transport and functions of mineral ions in flowering plants. (15 marks)

For Biology (Human) you should choose EITHER Question 3 OR Question 5H.

3. The structure of DNA and the production of genetically modified organisms. (15 marks)

5H. The structure of proteins and how proteins provide evidence for human evolution. (15 marks)

Marks will be awarded for scientific content, coverage of the topic, and the quality of written communication. You should include in your answer any relevant information from the whole of your course. You may include diagrams if you wish, but make sure that they are relevant to your essay and add extra information to it.

Indicate which question you have chosen by marking the box (☒). If you change your mind, put a line through the box (☒) and then indicate your new question with a cross (☒).

- Chosen question number: Question 3 ☒
Question 4B ☒
Question 5H ☒

Write your answer, including any plan, here.

.....
.....
.....
.....
.....



Leave
blank

A large rectangular area containing 25 horizontal dotted lines for writing.



Leave
blank

Lined writing area with horizontal dotted lines.





Leave
blank

Area containing horizontal dotted lines for writing.



N 3 3 9 0 9 A 0 1 1 2 0



Leave
blank

A large rectangular area containing 28 horizontal dotted lines, intended for writing.





<p>A large rectangular area containing 25 horizontal dotted lines, intended for writing or drawing.</p>	<p>Leave blank</p>
---	------------------------



BLANK PAGE



BLANK PAGE

