Cambridge IGCSE

**Cambridge International Examinations**
Cambridge International General Certificate of Secondary Education

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CANDIDATE NAME | | | | | | | | | |
| CENTRE NUMBER | | | | | | CANDIDATE NUMBER | | | | |



**BIOLOGY** **0610/21**

Paper 2 Core **October/November 2015**

**1 hour 15 minutes**

Candidates answer on the Question Paper.

No Additional Materials are required.

**READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.

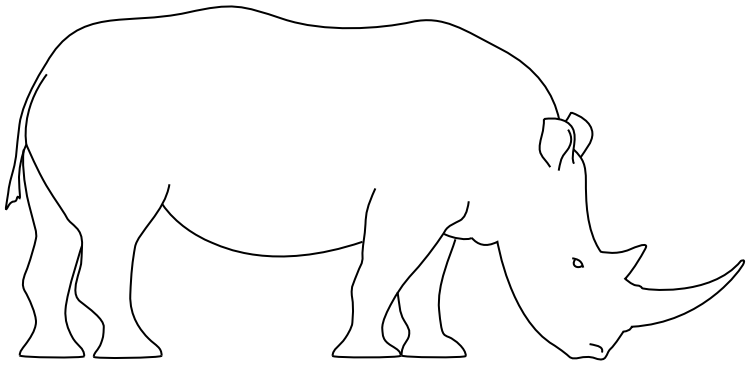
Electronic calculators may be used.
You may lose marks if you do not show your working or if you do not use appropriate units.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

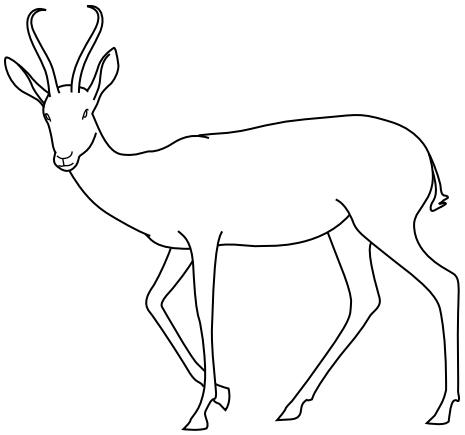
The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **18** printed pages and **2** blank pages.

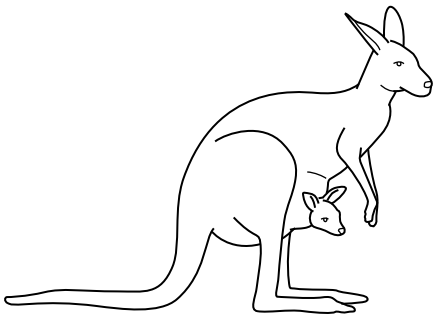
**1** Fig. 1.1 shows five different mammals.



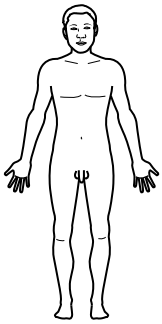
**A**



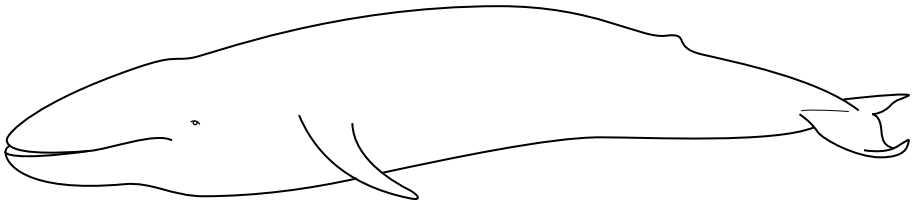
**B**



**C**



**D**



**E**

**not drawn to scale**

**Fig. 1.1**

Use the key to identify the mammals shown in Fig. 1.1.

Write the letter of each species (**A** to **E**) in the correct box beside the key.

**key**

| | | | | letter |
|---|---|---|---|---|
| 1 | (a) | has visible external ears | go to 2 | |
| | (b) | does not have visible external ears | *Eschrichtius robustus* | |
| 2 | (a) | stands on four legs | go to 3 | |
| | (b) | stands on two legs | go to 4 | |
| 3 | (a) | has two horns between its ears | *Antidorcas marsupialis* | |
| | (b) | has two horns in front of its ears | *Diceros bicornis* | |
| 4 | (a) | has ears placed on top of head | *Macropus rufus* | |
| | (b) | has ears placed at the side of head | *Homo sapiens* | |

[4]

**[Total: 4]**

**2** **(a)** Define the term *homeostasis*.

.....

.....

.....

.....[2]

**(b)** Fig. 2.1 shows a section through the skin.

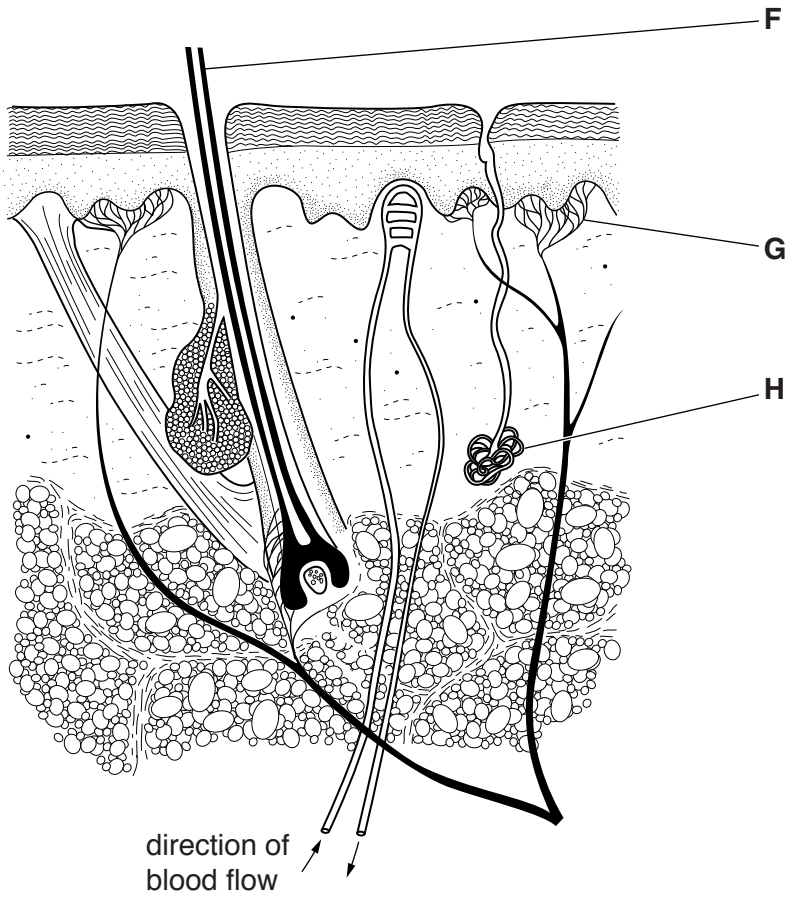



**Fig. 2.1**

**(i)** Name the structures **F**, **G** and **H**, shown on Fig. 2.1.

**F** .....

**G** .....

**H** .....

[3]

Fig. 2.2 shows the same section through the skin.

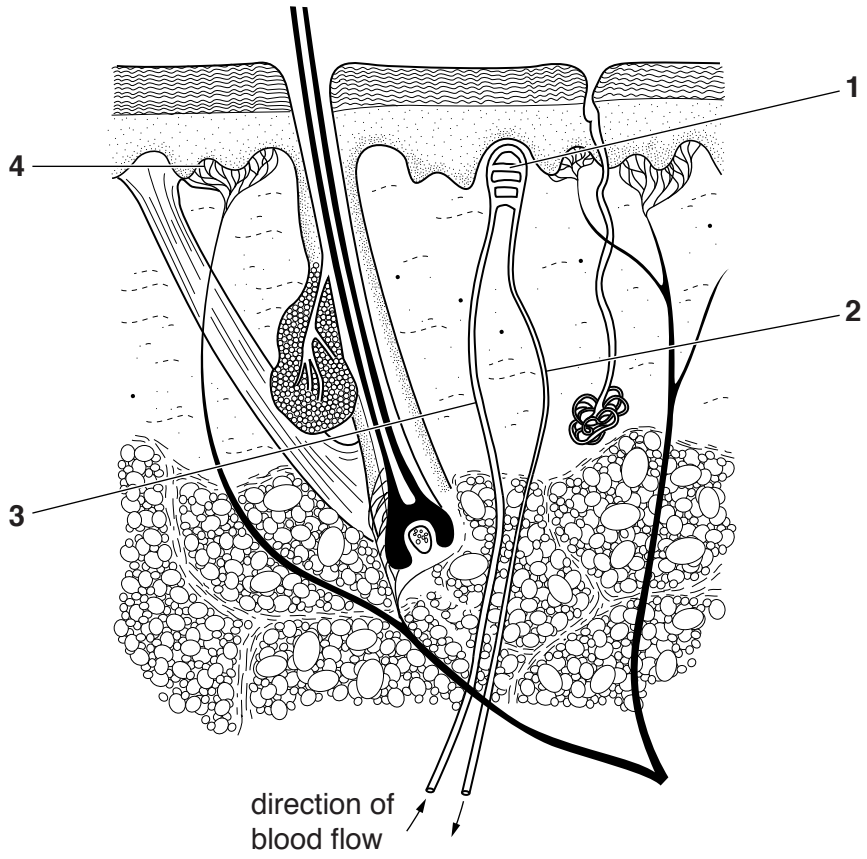



**Fig. 2.2**

**(ii)** Using Fig. 2.2, state which numbered part of the skin, **1** – **4**, has the highest temperature on a cold day.

part number ..... [1]

**(c)** When the body temperature rises above 37 °C, two changes occur in the skin to help the temperature return to normal:

- vasodilation
- increased sweating.

Fig. 2.3 shows a simplified diagram of the skin.

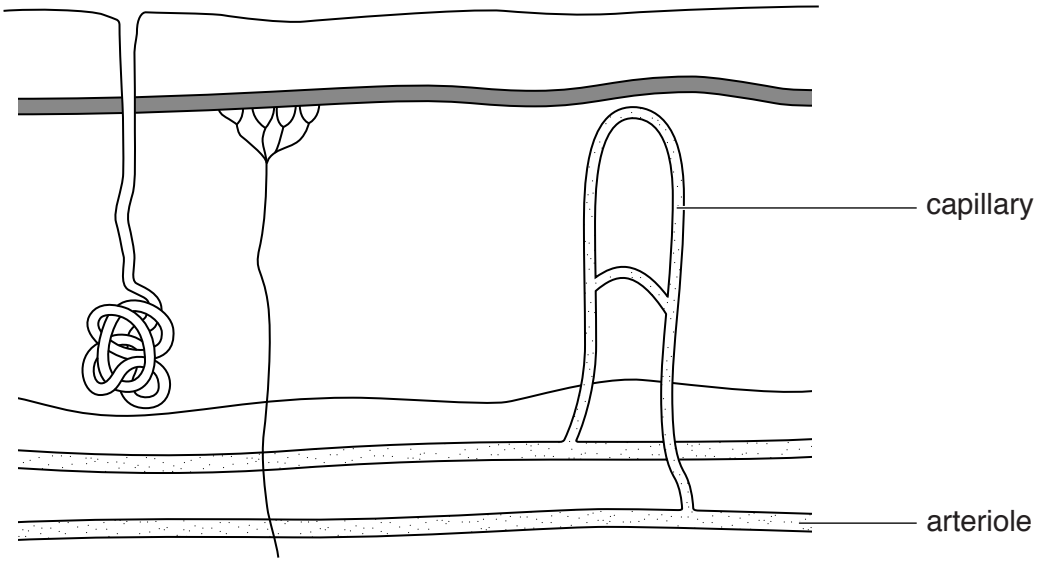



**Fig. 2.3**

**(i)** Describe what happens in vasodilation, and explain how this helps to lower body temperature.

Use Fig. 2.3 to help with your explanation.

.....

.....

.....

.....

.....[3]

**(ii)** Explain how increased sweating helps to lower the body temperature.

.....

.....

.....

.....

.....

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.....

.....

.....[3]

**(iii)** State **two** methods, other than reduced sweating, that the body uses to stop the body temperature falling below normal on a cold day.

1 .....

2 .....
[2]

**(d)** Name the part of the body which coordinates the changes in the skin to keep the body temperature at 37 °C.

.....[1]

**[Total: 15]**

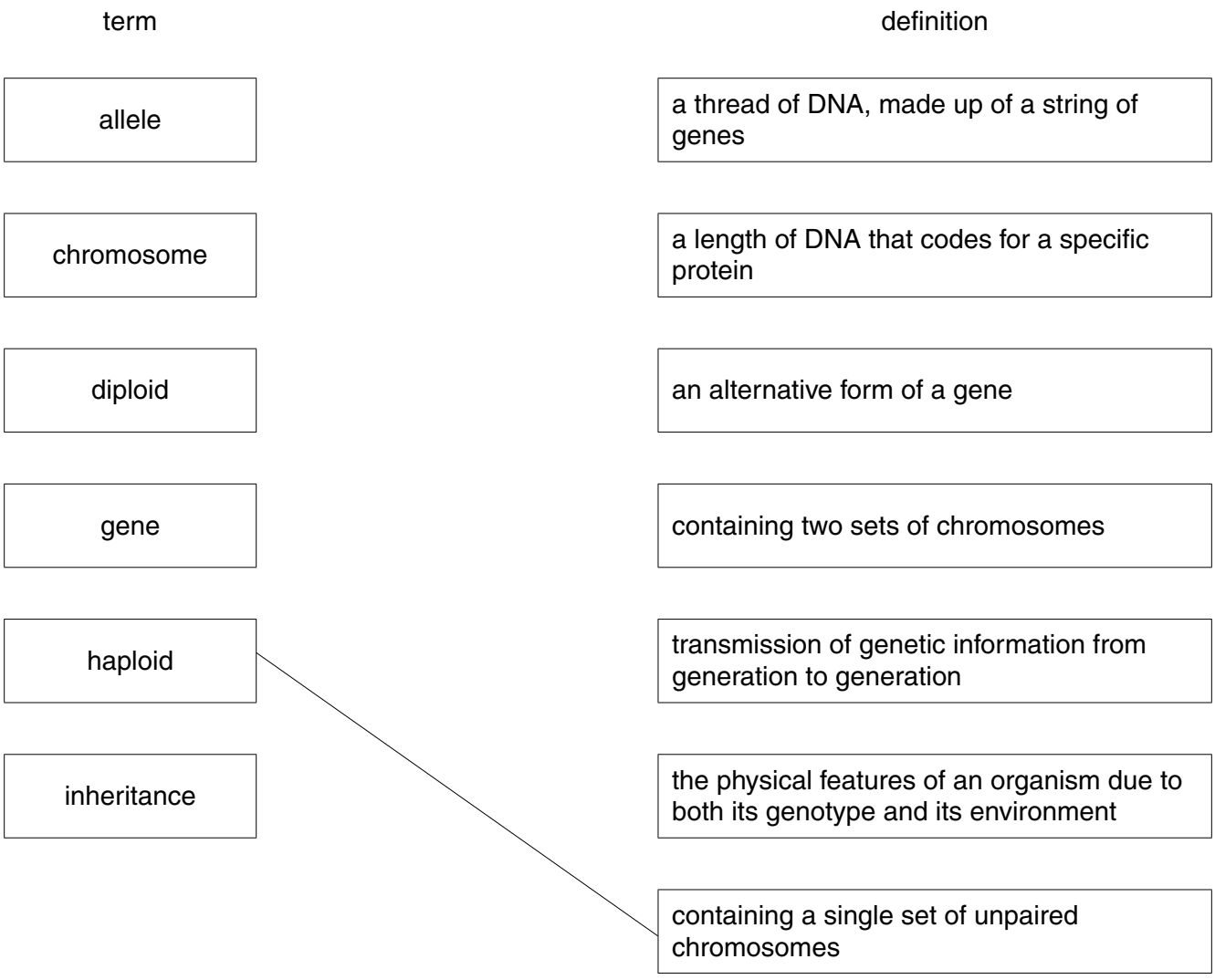
**3** The boxes on the left contain some genetic terms.

The boxes on the right contain definitions of genetic terms.

Draw **one** straight line to join each term to its correct definition.

Draw only five lines.

One example has been done for you.




[5]

**[Total: 5]**

**4** Fig. 4.1 shows a seed as it is starting to germinate and the same seed several days later.

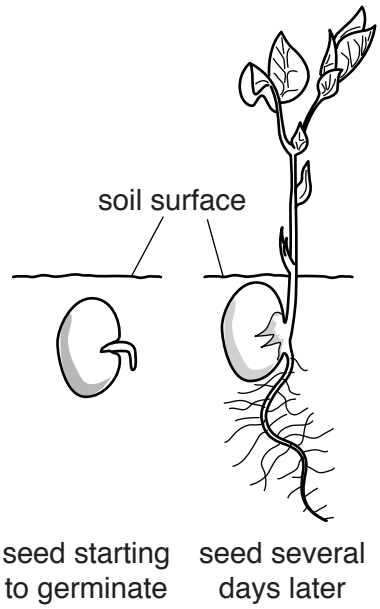



**Fig. 4.1**

**(a)** Explain how growth differs from development.

Use information from Fig. 4.1 to help with your explanation.

.....

.....

.....

.....

.....

.....

.....

.....

.....[4]

**(b)** State **three** environmental conditions that all seeds need before they can germinate.

1 .....

2 .....

3 .....

[3]

**[Total: 7]**

**5** Fig. 5.1 shows the reproductive system of a man.

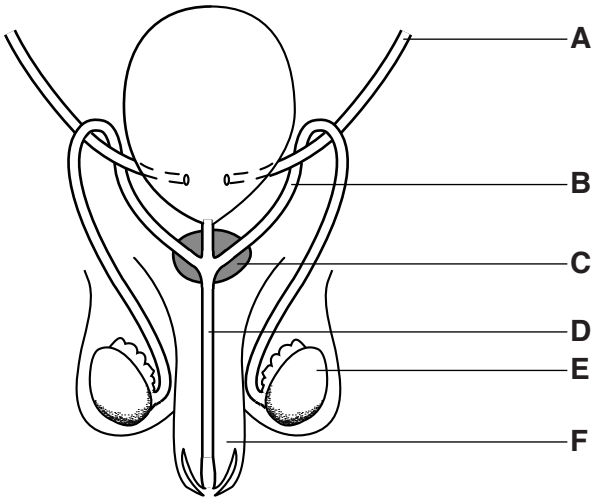



**Fig. 5.1**

**(a)** The functions of some of the parts of the reproductive system of a man are given in Table 5.1. Complete Table 5.1 using information from Fig. 5.1. One row has been done for you:

**Table 5.1**

| function | letter from Fig. 5.1 | name |
|---|---|---|
| produces fluid for sperm to swim in | **C** | prostate gland |
| produces sperm and testosterone | | |
| introduces sperm into the female body | | |
| carries sperm or urine | | |

[6]

**(b) (i)** Some men have an operation called a vasectomy. This involves cutting the sperm ducts. Place an **X** on Fig. 5.1 to show where the sperm duct would be cut. [1]

**(ii)** State why this operation is carried out.

.....

.....[1]

**[Total: 8]**

**6** Fig. 6.1 shows a human kidney and the ureter attached to it.

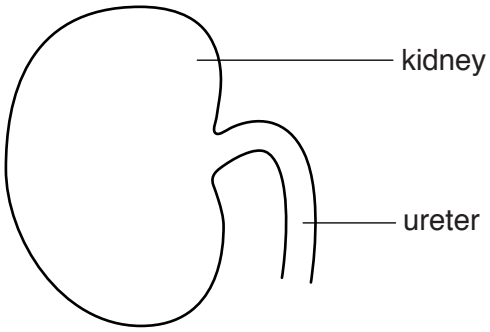



**Fig. 6.1**

**(a)** Two other tubes are attached to the kidney, but are not shown on Fig. 6.1.

Name these two tubes.

1 .....

2 .....
[2]

**(b)** Kidneys excrete urea.

State **one** other substance that is excreted by the kidneys.

.....[1]

**(c)** **(i)** State where urea is formed.

.....[1]

**(ii)** Explain why urea has to be produced.

.....

.....

.....

.....

.....[2]

**(iii)** State how urea travels to the kidney.

.....

.....

.....[1]

**[Total: 7]**

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**7** Fig. 7.1 shows part of the carbon cycle.

The arrows represent the processes that take place in the carbon cycle.

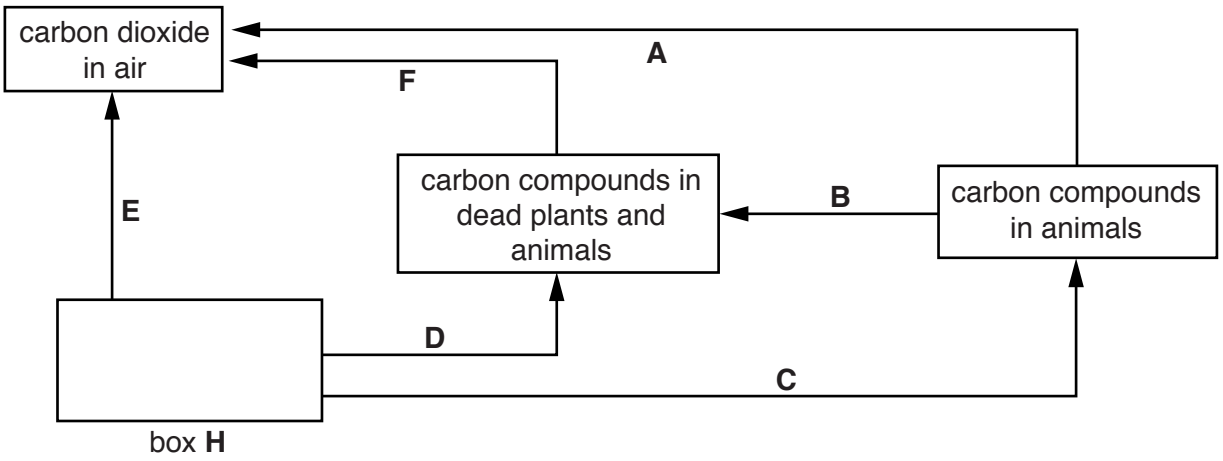


**Fig. 7.1**

**(a) (i)** Complete Fig. 7.1 by filling in box **H**. [1]

**(ii)** State the process represented by letter **C**.

.....[1]

**(iii)** Draw a line with an arrow on Fig. 7.1 to represent photosynthesis.

Label this line **G**. [1]

**(iv)** State the process represented by letter **B**.

.....[1]

**(b) (i)** State which **two** letters represent respiration.

..... ..... [2]

**(ii)** Write the word equation for aerobic respiration.

.....[2]

**(iii)** Explain why every living cell has to carry out respiration.

.....

.....

.....

.....

.....[2]

**[Total: 10]**

**8** **(a)** Explain why food has to be digested.

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.....

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.....[3]

Fig. 8.1 shows a section through the human body.

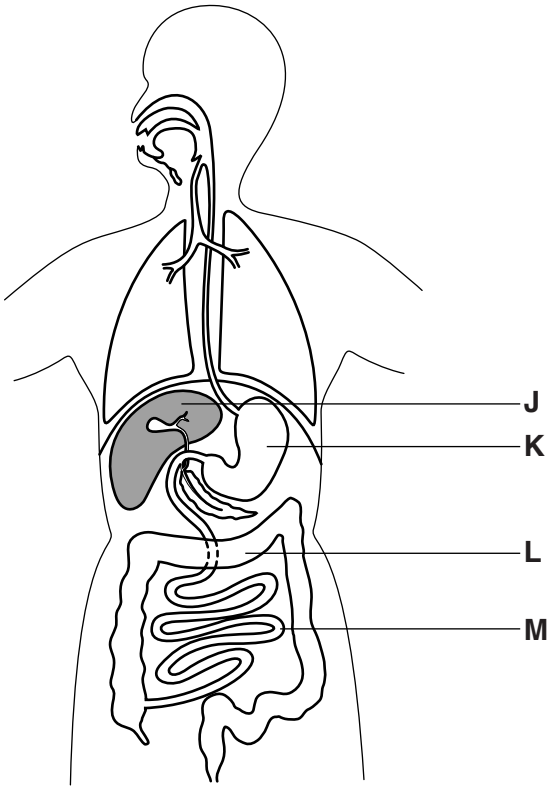


**Fig. 8.1**

**(b)** Identify the structures labelled on Fig. 8.1.

Write your answers in Table 8.1.

**Table 8.1**

| structure | name |
|---|---|
| **J** | |
| **K** | |
| **L** | |
| **M** | |

[4]

**(c)** In a medical investigation the number of villi in four people was compared. The results given in Table 8.2 show the average number of villi present in 1 $cm^2$ of ileum wall.

**Table 8.2**

| person | average number of villi per $cm^2$ |
|---|---|
| **P** | 4200 |
| **Q** | 4500 |
| **R** | 3500 |
| **S** | 3250 |

**(i)** Calculate the difference in the number of villi between person **P** and person **S**.

difference = ..... per $cm^2$ [1]

**(ii)** Further investigations showed that person **Q** could absorb digested food more rapidly than the other people.

Use the information in Table 8.2 to explain this result.

.....

.....

.....

.....

.....

.....[3]

**[Total: 11]**

**9** Transpiration occurs in plants.

**(a)** Explain what is meant by the term *transpiration*.

.....

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.....

.....

.....[3]

**(b)** Fig. 9.1 shows a healthy plant and its appearance three hours later when it has started to wilt.

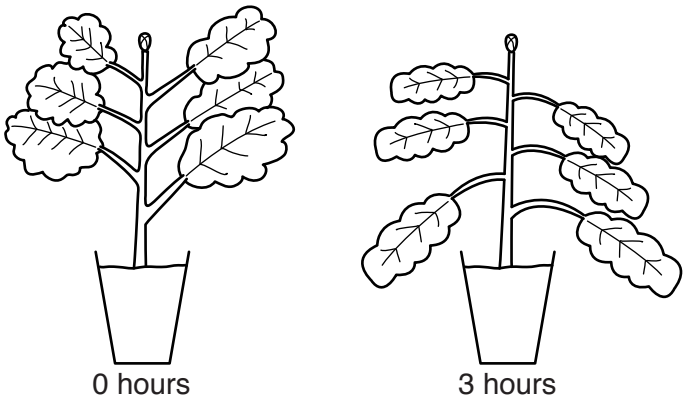


**Fig. 9.1**

State and explain **two** changes a student could make to the environment of the plant that would stop it wilting any further.

change to the environment .....

explanation .....

.....

.....

change to the environment .....

explanation .....

.....

.....

[4]

**[Total: 7]**

**Question 10 starts on page 18.**

**10** Some animals were introduced into a new habitat.

Fig. 10.1 shows how the number of animals in the population changed with time.

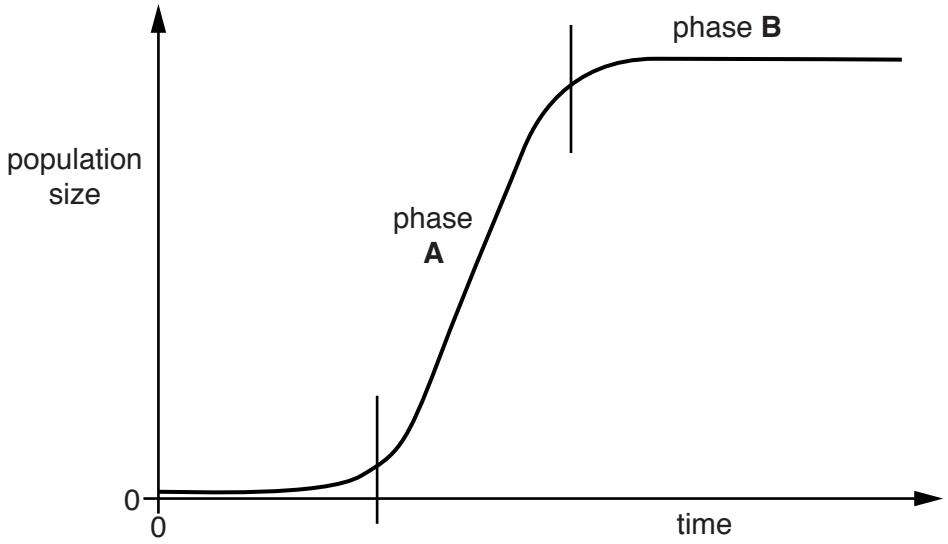


**Fig. 10.1**

**(a)** Name phase **A** and phase **B** of the population growth curve shown in Fig. 10.1.

phase **A** .....

phase **B** ..... [2]

**(b)** Fig. 10.2 shows the human population growth curve since the year 1 A.D.

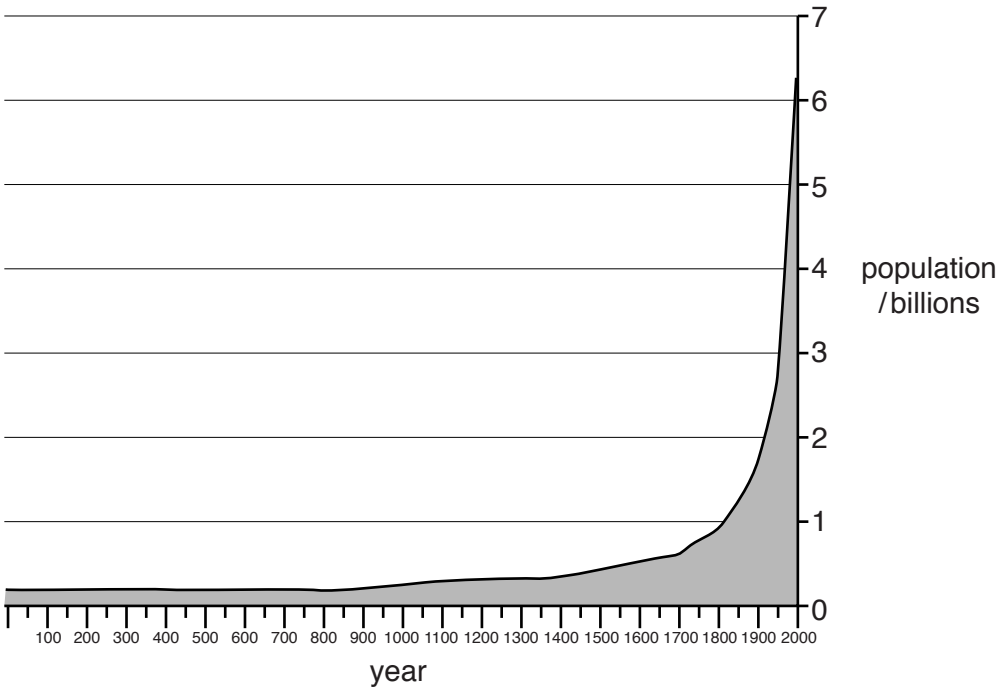


**Fig. 10.2**

**(i)** State **and** explain how the human population growth curve is different to the growth curve in Fig. 10.1.

.....

.....

.....

.....

.....

.....

.....[3]

**(ii)** Suggest **one** social implication that might arise from the current size of the human population.

.....

.....

.....[1]

**[Total: 6]**

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