Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

3908364711

BIOLOGY **0610/23**

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.

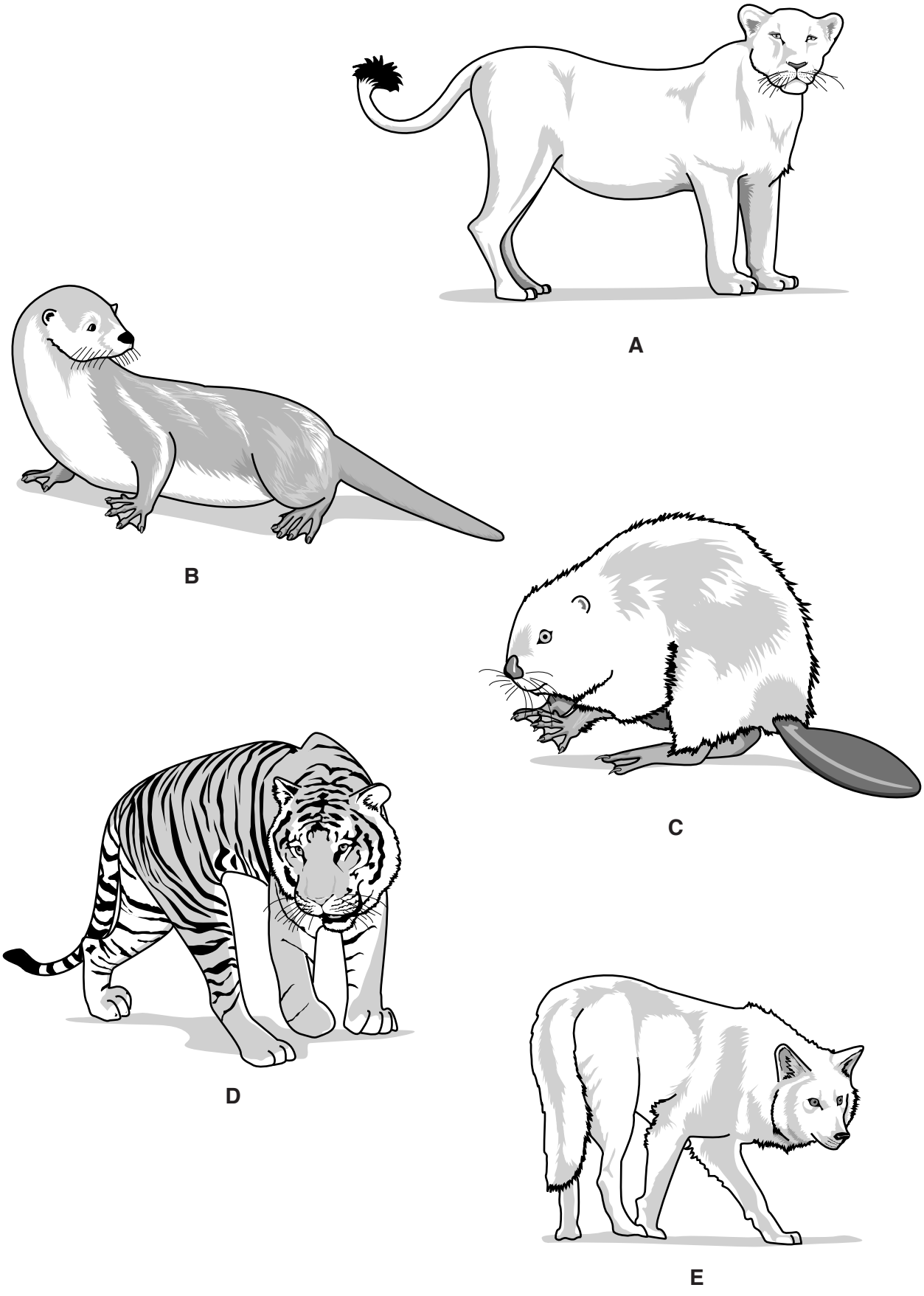
At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

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 **19** printed pages and **1** blank page.

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1 Fig. 1.1 shows five different mammals.



not drawn to scale

Fig. 1.1

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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 webbed feet	go to 2	
	(b)	does not have webbed feet	go to 3	
2	(a)	tail wide and flattened	*Castor canadensis*	
	(b)	tail rounded, ending in a point	*Lutra lutra*	
3	(a)	body fur striped	*Panthera tigris*	
	(b)	body fur not striped	go to 4	
4	(a)	tail has tuft of dark fur at the end	*Panthera leo*	
	(b)	no tuft of fur at end of tail	*Canis lupus*	

[4]

[Total: 4]

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

.....

.....

.....

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.....

.....

.....[3]

(b) Fig. 2.1 shows four leaves from the same tree.

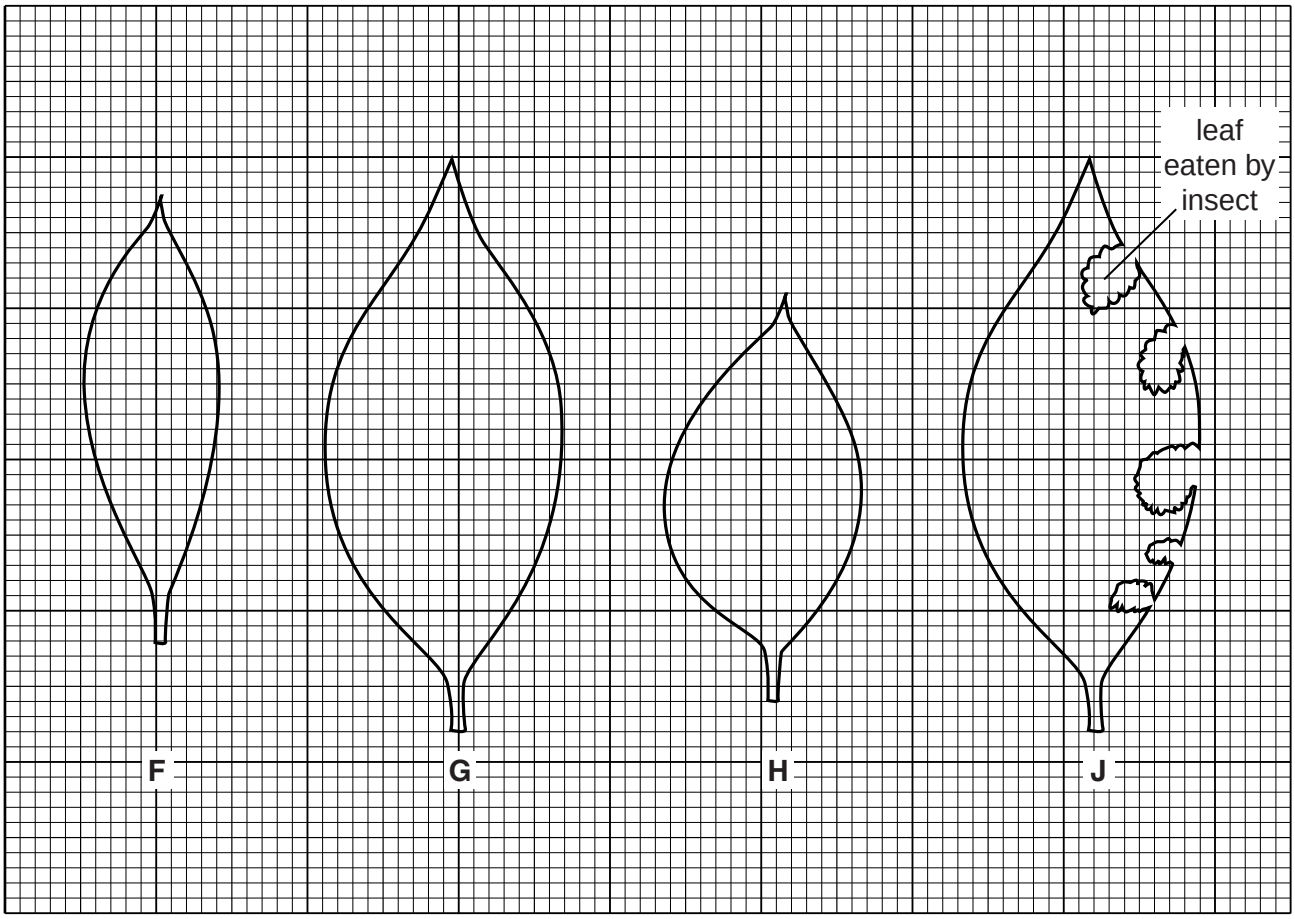


Fig. 2.1

Suggest which leaf will transpire most rapidly and give a reason for your answer.

leaf .....

reason .....

.....

.....

.....

.....

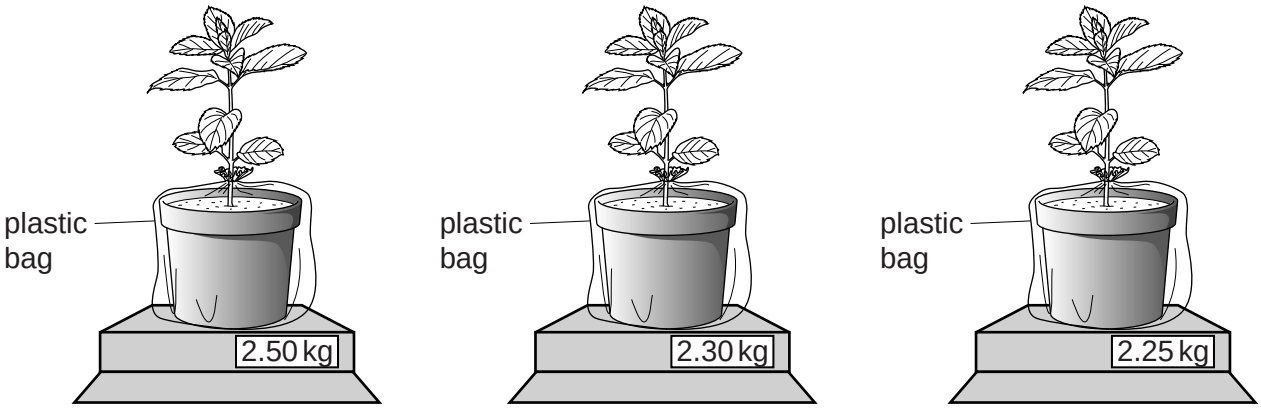
[3]

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(c) Fig. 2.2 shows a healthy plant during an investigation into transpiration.

It was kept in the same environment, apart from the light changing, during 24 hours.

The mass of the plant and pot was measured at the start, after 12 hours in the light and after a further 12 hours in the dark.



at the start

after 12 hours in the light

after a further 12 hours in the dark

Fig. 2.2

(i) Describe the results of the investigation shown in Fig. 2.2.

.....

.....

.....

.....

.....[2]

(ii) Suggest **and** explain why the plant pot was enclosed in a plastic bag for this investigation.

.....

.....

.....

.....

.....[2]

(iii) State **two** environmental factors, other than light, that would change the rate of transpiration in the plant shown in Fig. 2.2.

1 .....

.....

2 .....

.....

[2]

[Total: 12]

3 (a) (i) Fig. 3.1 shows a fetus inside its mother.

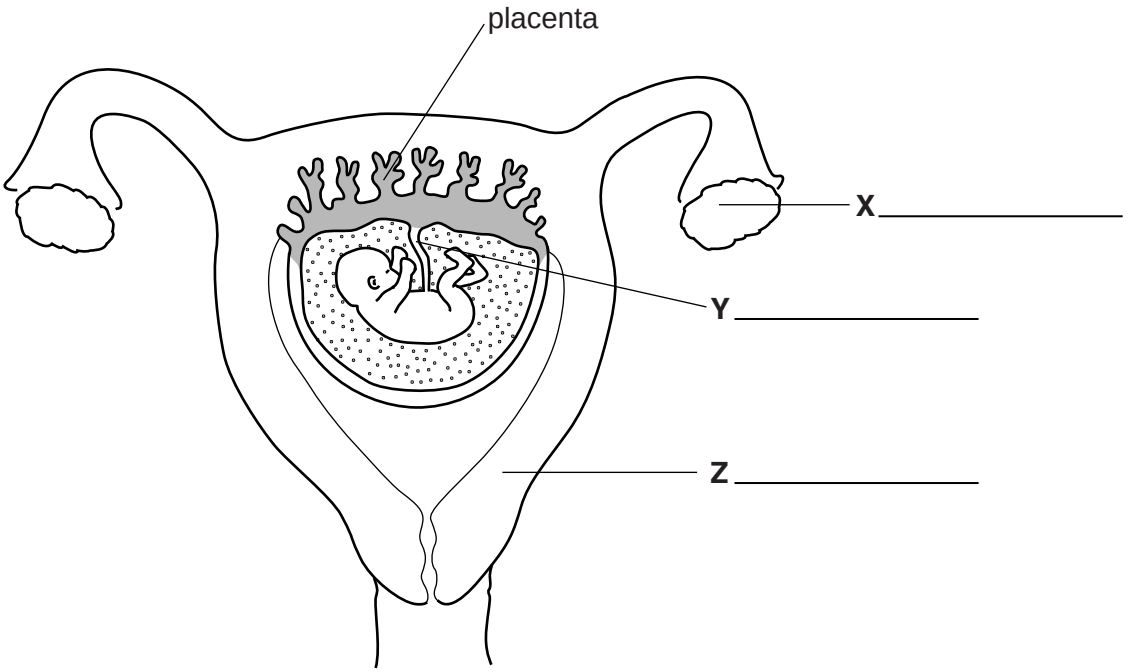


Fig. 3.1

Identify the structures labelled **X**, **Y** and **Z** on Fig. 3.1.

Write your answers on Fig. 3.1. [3]

(ii) Add a label line and the letter **F** on Fig. 3.1 to show where fertilisation normally occurs. [1]

(iii) The placenta is the organ where chemicals are exchanged between the blood of the mother and the blood of the fetus.

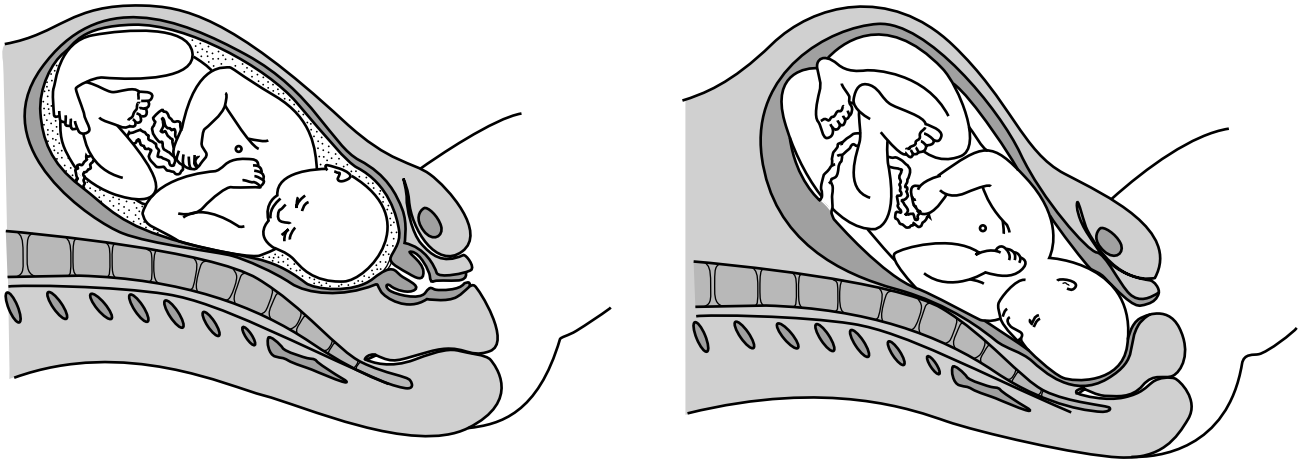
Complete Table 3.1 by stating **two** chemicals that pass from the mother to the fetus and **two** chemicals that pass from the fetus to the mother.

Table 3.1

chemical passing from mother to fetus	chemical passing from fetus to mother
1	1
2	2

[4]

(b) Fig. 3.2 shows two stages in the birth of a baby.



stage one **stage two**

Fig. 3.2

Describe **two** changes that have occurred between stage one and stage two that will help the birth of the baby.

State what has changed and how this makes the birth easier.

Write your answers in Table 3.2.

Table 3.2

	what has changed	how this makes the birth easier
change 1		
change 2		

[4]

(c) During pregnancy the baby grows and develops.

Explain the difference between growth and development.

.....

.....

.....

.....

.....

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.....

.....

.....[4]

(d) Fig. 3.3 shows how the length of a fetus changes during pregnancy.

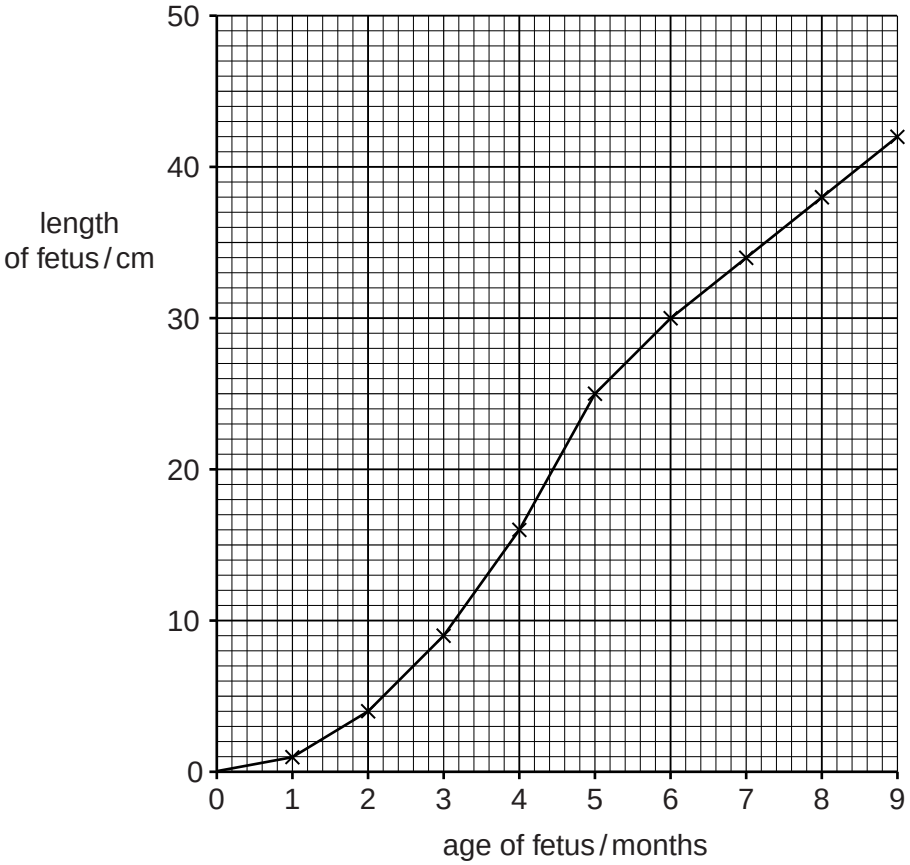


Fig. 3.3

(i) State the age of the fetus when it is 16 cm long.

.....months [1]

(ii) State the length of the fetus at 7.5 months old.

.....cm [1]

(iii) Calculate how many times longer the fetus is at four months old than it is at two months old.

..... [1]

[Total: 19]

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4 Describe why it is important for humans to conserve species and their habitats.

.....

.....

.....

.....

.....

.....

.....

.....

.....[4]

[Total: 4]

5 The boxes on the left contain some biological terms.

The boxes on the right contain descriptions of these biological terms.

Draw one straight line to join each term with its description.

Draw only six lines.

One has been done for you.

biological term	description
translocation	movement of sucrose and amino acids in phloem
assimilation	removal from organisms of toxic materials, waste products of metabolism and substances in excess
excretion	movement of digested food into a cell where it becomes part of the cell
nutrition	diffusion of water through a partially permeable membrane
ingestion	chemical reaction that breaks down nutrient molecules to release energy
osmosis	taking in, absorbing and using substances for growth and repair of the body
respiration	taking in food through the mouth

[5]

[Total: 5]

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6 **(a)** Fig. 6.1 shows a seed that has been buried in the soil, before and after it has germinated.

On the seed labelled **germinated seed** in Fig. 6.1, draw and label the plumule (shoot) and radicle which develop after germination.

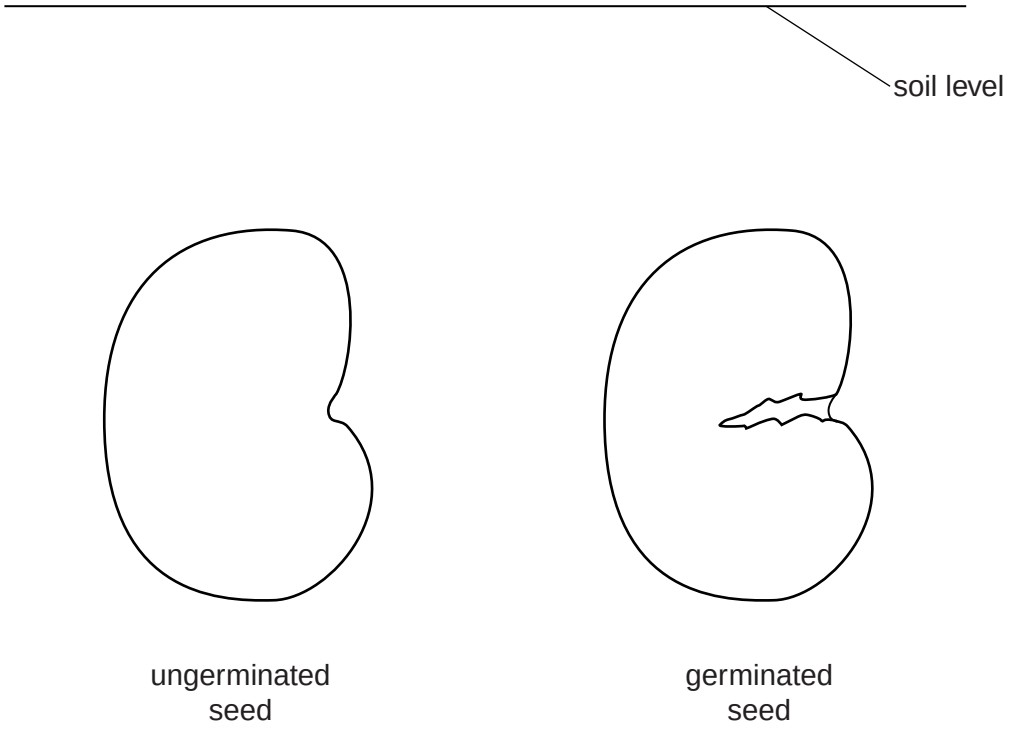


Fig. 6.1

[2]

(b) State the name of the response that causes a plant to grow towards or away from:

- gravity

  .....

- light.

  .....

[2]

[Total: 4]

7 **(a)** Fig. 7.1 shows a diagram of a section through the heart.

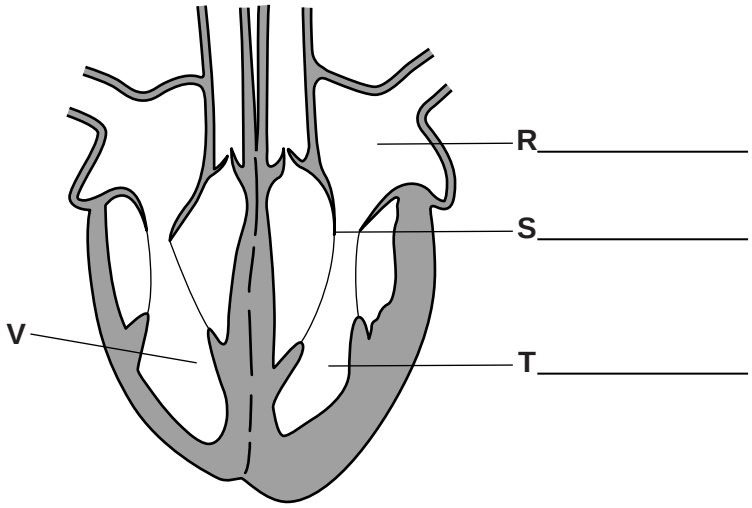


Fig. 7.1

(i) Identify the structures labelled **R**, **S** and **T** on Fig. 7.1.

Write your answers on Fig. 7.1. [3]

(ii) Suggest why the wall of chamber **T** is thicker than the wall of chamber **V**, as shown on Fig. 7.1.

.....

.....

.....[1]

(iii) The heart creates and maintains a one-way flow of blood around the body.

Describe how the heart does this.

.....

.....

.....

.....

.....[2]

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(b) Fig. 7.2 shows part of the circulatory system.

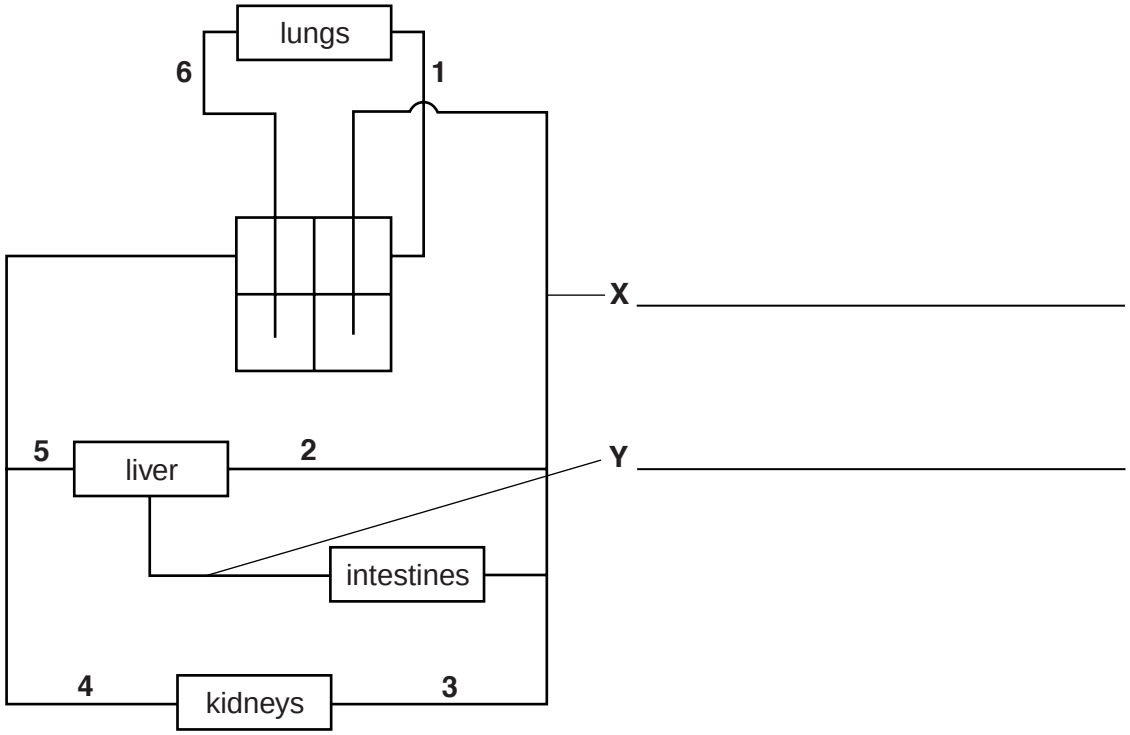


Fig. 7.2

(i) Identify the blood vessels labelled **X** and **Y** on Fig. 7.2.

Write your answers on Fig. 7.2. [2]

(ii) Use the numbers on Fig. 7.2 to identify the blood vessels containing blood as described in Table 7.1.

Write your answers in Table 7.1.

Table 7.1

description of blood	number of the blood vessel
has the highest concentration of oxygen	
has the highest concentration of urea	
has the lowest concentration of urea	

[3]

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[Turn over

(c) Table 7.2 shows some measurements made on the blood of three students.

Student **P** is healthy but students **L**, **M** and **N** suffer from ill-health.

Table 7.2

measurement of blood	student **L**	student **M**	student **N**	student **P**
number of red blood cells per mm^3	8.1 million	5.4 million	8.2 million	8.0 million
number of white blood cells per mm^3	5500	8750	8700	8600
number of blood platelets per mm^3	255 000	250 000	150 000	245 000

State which of the students has the following health problem:

cannot make enough antibodies .....

blood takes a long time to clot .....

becomes exhausted quickly during exercise. .....

[3]

[Total: 14]

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8 Choose words from the list to complete the sentences.

Each word may be used once, more than once or not at all.

accommodation brain vasoconstriction diffusion

vasodilation evaporation heart homeostasis

saliva sweat tears

The skin helps to keep the body temperature constant. This is part of the process called ..... .

Control of body temperature is coordinated by the ..... .

If the temperature of the blood rises above normal, the body responds by ..... of the blood vessels near the surface of the skin.

Some glands in the skin also produce ..... which helps cool the body by ..... . [5]

[Total: 5]

9 **(a)** **(i)** Define the term *population*.

.....

.....

.....

.....

.....[3]

(ii) State **three** factors that can affect the size of a population.

1 .....

2 .....

3 .....

[3]

(b) Fig. 9.1 shows the growth curve of a colony of bacteria living in an environment with limited resources.

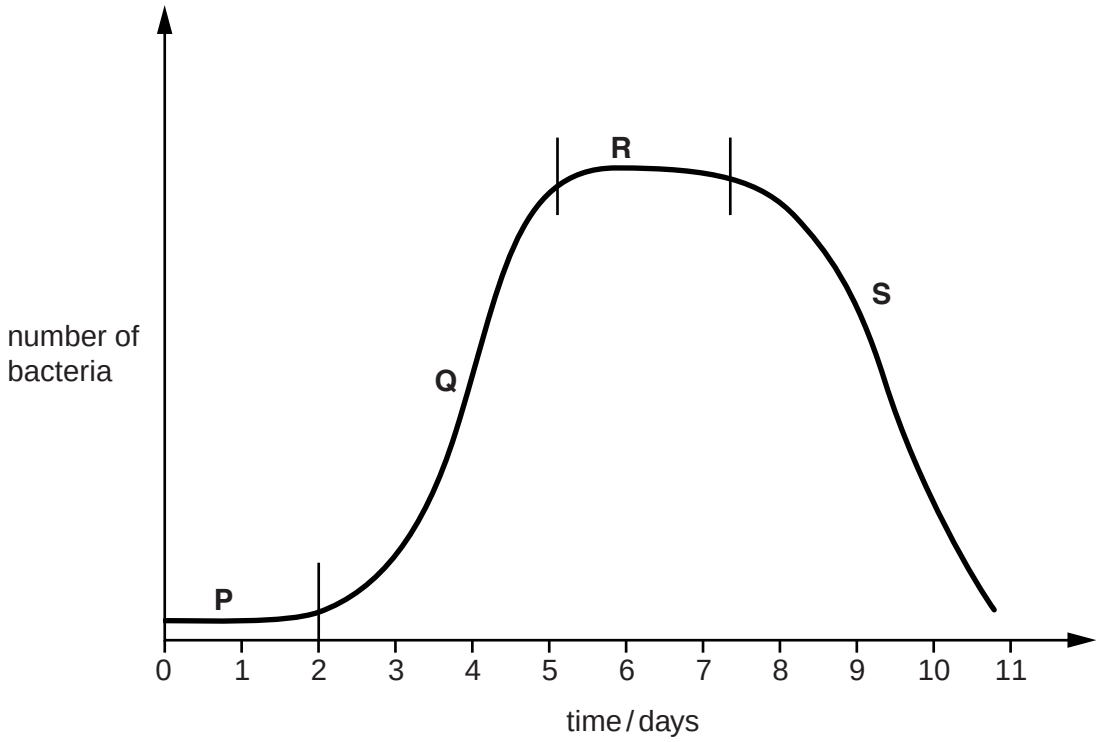


Fig. 9.1

(i) Name the parts of the graph on Fig. 9.1 that are labelled **Q** and **R**.

Q .....

R .....

[2]

(ii) Describe **and** explain what is happening in the section of the graph labelled **S** on Fig. 9.1.

.....

.....

.....

.....

.....[2]

Fig. 9.2 shows the world population for humans.

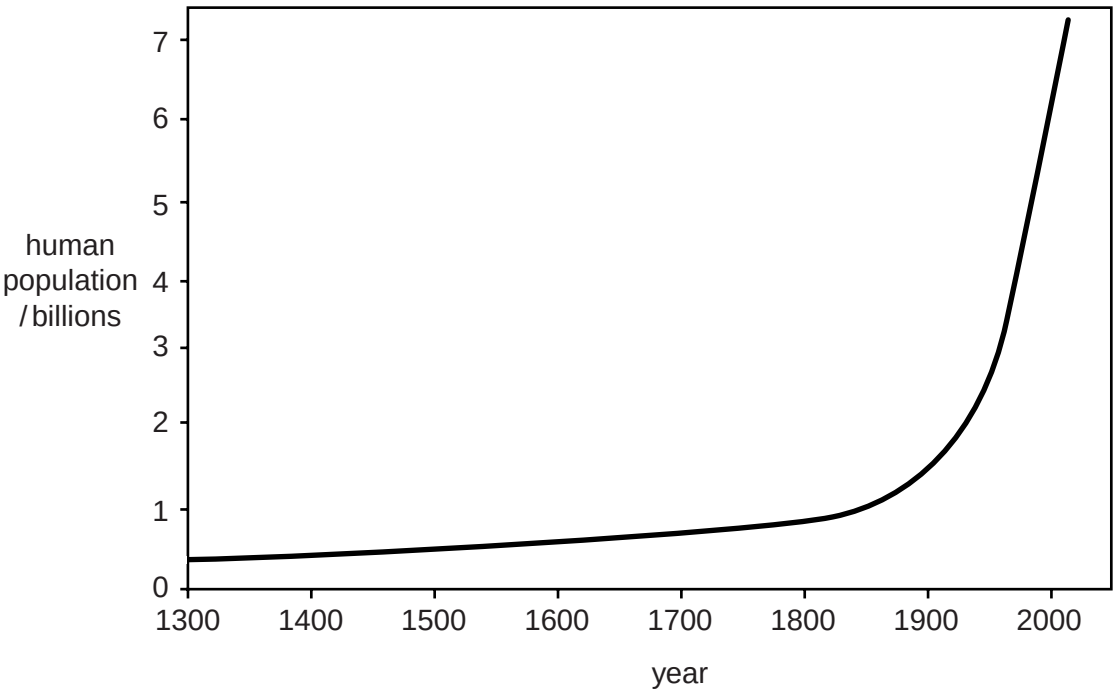


Fig. 9.2

(iii) State **three** ways in which this graph is different to the graph of the bacterial population in Fig. 9.1.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

[Total: 13]

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