Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

8508702162

BIOLOGY **0610/32**

Paper 3 Theory (Core) **May/June 2016**

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 four different reptiles.

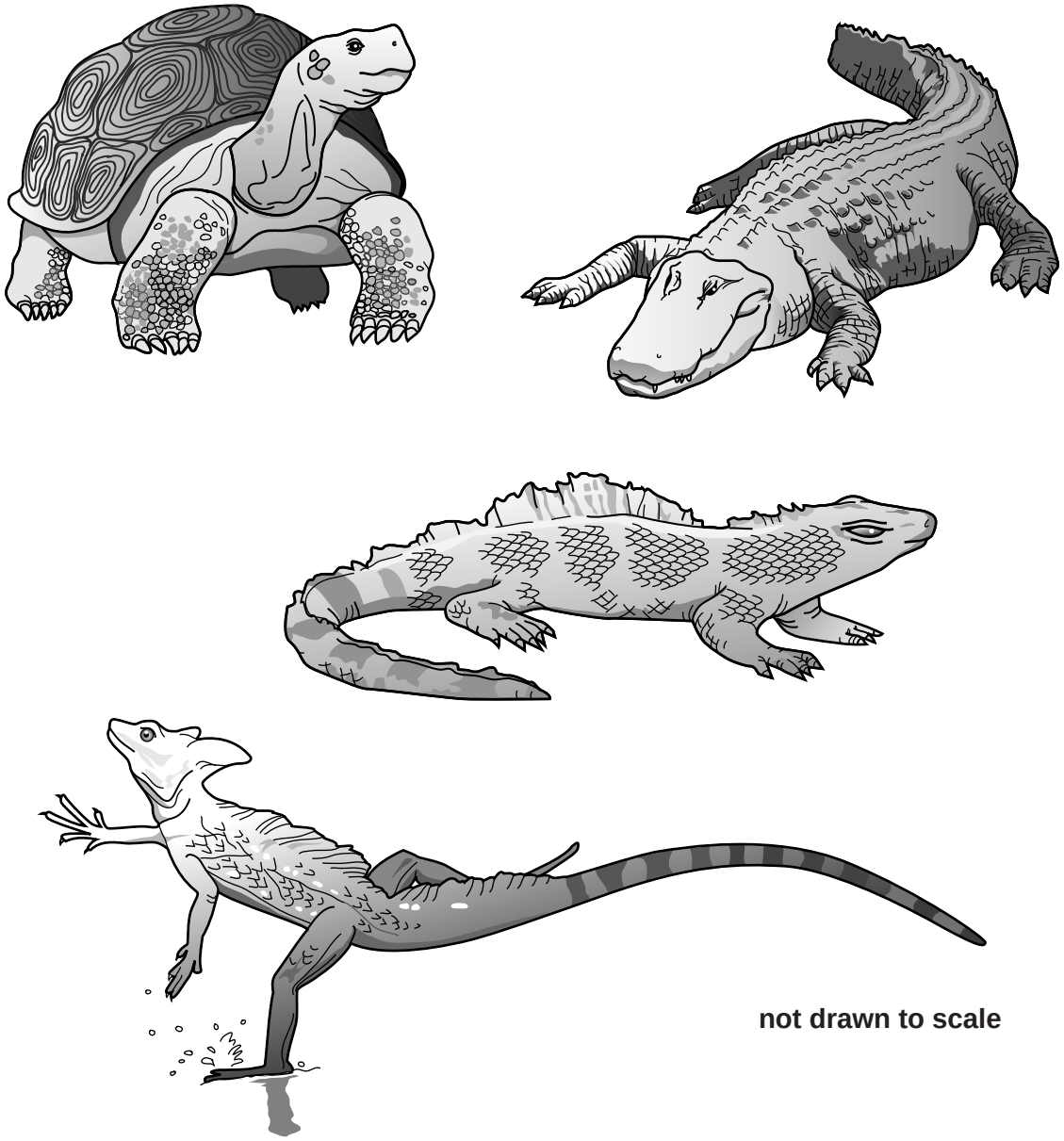


Fig. 1.1

(a) (i) Reptiles are vertebrates.

State **one** feature which all vertebrates have in common.

.....

.....[1]

(ii) State **two** features which can be used to identify the animals in Fig. 1.1 as reptiles.

1 .....

.....

2 .....

.....

[2]

(iii) Fig. 1.2 shows a snake.

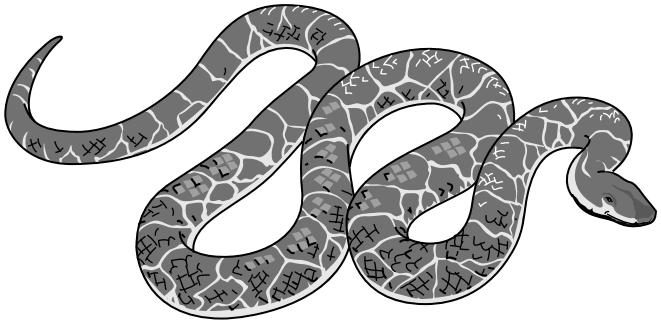


Fig. 1.2

Snakes are also reptiles. State **one** way, **visible** in Fig. 1.2, in which snakes are different from the reptiles shown in Fig. 1.1.

.....

.....[1]

Fig. 1.3 shows a newt, which looks similar to some reptiles, but belongs to a different vertebrate group.

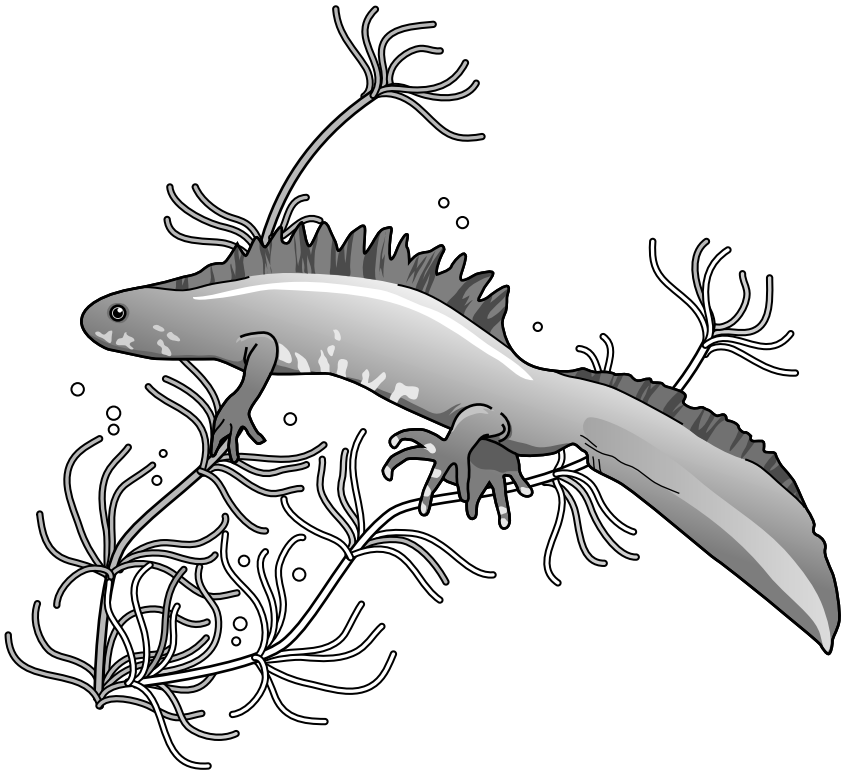


Fig. 1.3

(b) (i) State the vertebrate group to which the newt belongs.

Choose from this list and **circle** your answer.

amphibian **bird** **fish** **mammal**

[1]

(ii) State **two** features of this group which distinguish it from other vertebrate groups.

1 .....

.....

2 .....

.....

[2]

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(c) In some species of reptile, the female keeps the fertilised eggs in her body until they are ready to hatch. Suggest **two** advantages of having this adaptive feature.

1 .....

.....

2 .....

.....
[2]

[Total: 9]

2 Fig. 2.1 shows a scientific project which involves growing tomato plants and fish in the same glasshouse.

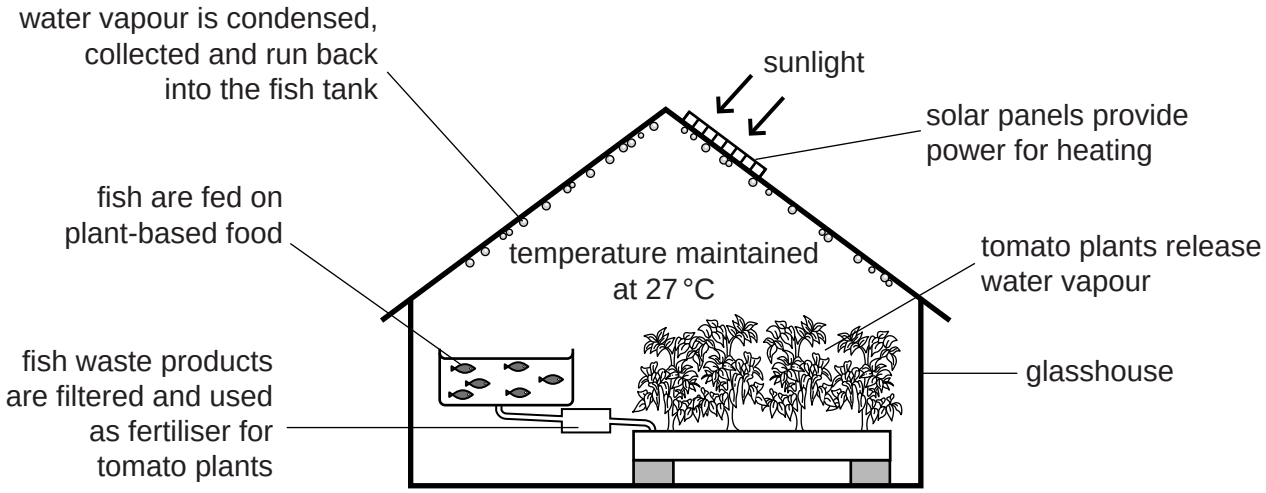


Fig. 2.1

(a) State the process in the water cycle which is **not** used in this project.

.....[1]

(b) State the name of the process by which:

(i) the plants release water vapour .....[1]

(ii) the fish release water and urea as waste products.

.....[1]

The fish in Fig. 2.1 are fed on plant-based food.

(c) **(i)** State the term used to describe animals which feed on plants.

.....[1]

(ii) The tomato plants in Fig. 2.1 are not grown in soil, because it can contain pathogens.

Define the term *pathogen*.

.....

.....

.....[1]

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(d) Describe **and** explain **two** ways in which growing tomatoes in this project may save the grower money.

.....

.....

.....

.....

.....[3]

(e) The process of growing fish and tomatoes in Fig. 2.1 shows some characteristics of a sustainable resource.

(i) Define the term *sustainable resource*.

.....

.....

.....

.....

.....[2]

(ii) Suggest why growing a species of fish in tanks may help to prevent extinction of the species.

.....

.....

.....[1]

[Total: 11]

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[Turn over

3 Flowers contain the male and female reproductive structures of a plant.

The female reproductive structure is the carpel.

The male reproductive structure is the stamen.

(a) Draw straight lines from the reproductive structures to show which parts of the flower are in each structure. You should draw only **five** lines.

reproductive structure	part of flower
	anther
	stigma
carpel	ovary
	petal
stamen	filament
	style
	sepal

[4]

(b) This question is about reproduction in humans.

Outline the events that occur between sperm being deposited in the vagina and the embryo being formed.

.....

.....

.....

.....

.....

.....

.....

.....

.....[4]

(c) State **two** ways in which meiosis is different from mitosis.

1 .....

.....

2 .....

.....

[2]

[Total: 10]

4 Fig. 4.1 shows a root hair cell.

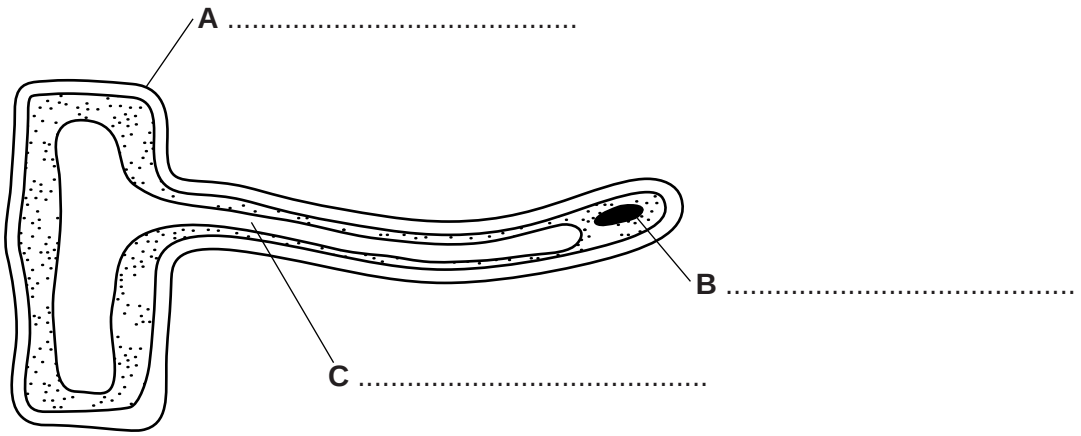


Fig. 4.1

(a) (i) Name the features labelled **A**, **B** and **C**.

Write your answers on Fig. 4.1. [3]

(ii) Feature **A** is made of cellulose. What is cellulose made from?

.....[1]

(iii) State **two** functions of a root hair cell.

1 .....

.....

2 .....

.....
[2]

(iv) Describe how a root hair cell is adapted for its function.

.....

.....

.....[1]

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(b) Fig. 4.2 shows a palisade mesophyll cell.

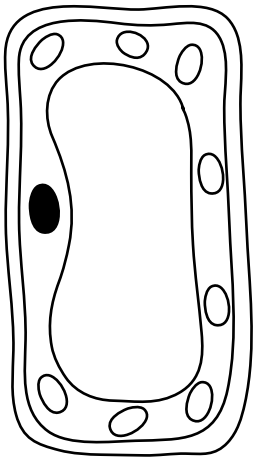


Fig. 4.2

The cell in Fig. 4.2 contains structures which are **not** present in root hair cells.

State the name of these structures **and** explain their function.

.....

.....

.....

.....

.....[3]

[Total: 10]

5 Fig. 5.1 shows the risk of coronary heart disease by age and gender.

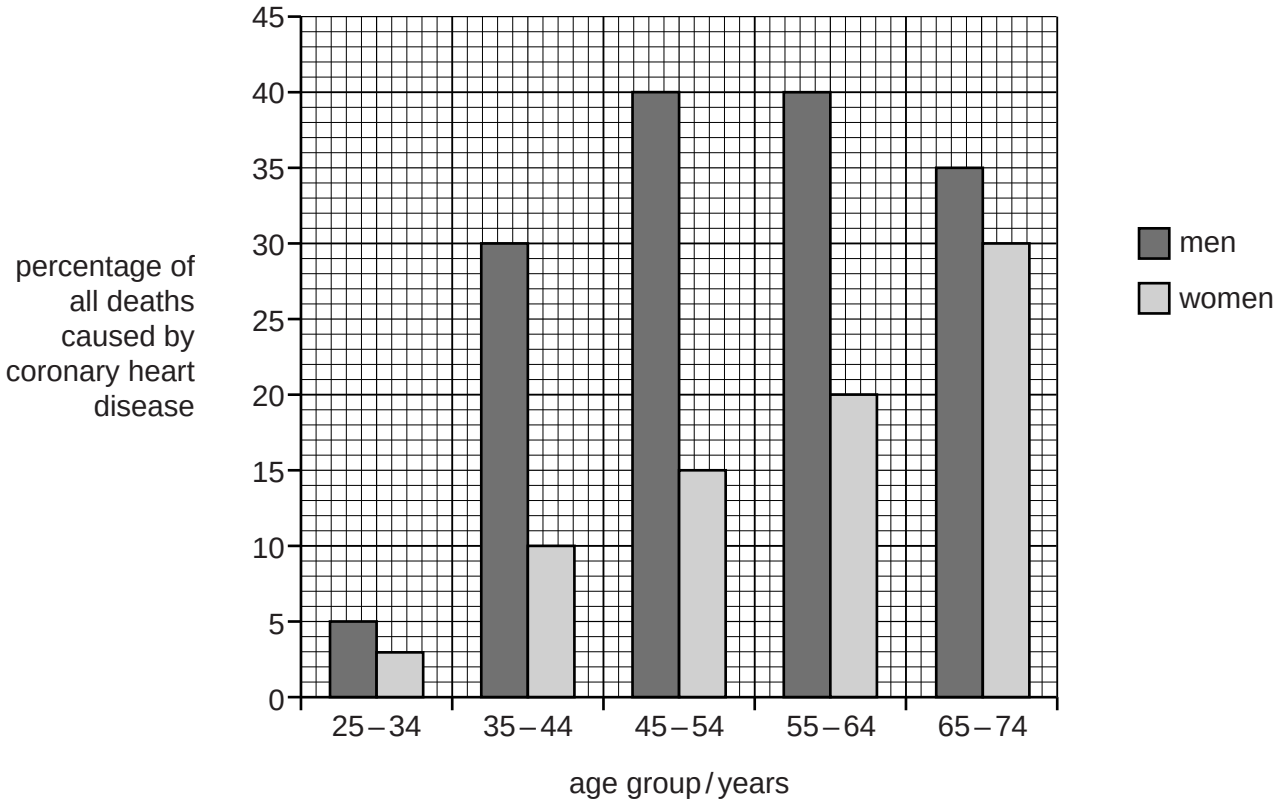


Fig. 5.1

(a) Use Fig. 5.1 to:

(i) state which age group has the lowest percentage of deaths caused by coronary heart disease

.....[1]

(ii) describe what happens to the risk of coronary heart disease as a man gets older

.....

.....

.....

.....

.....[2]

(iii) describe the difference in risk of coronary heart disease for a man and a woman between the ages of 55 and 64.

.....

.....

.....

.....

.....[2]

(b) State **three** risk factors for coronary heart disease, **other than** age and gender.

1 .....

2 .....

3 .....
[3]

(c) Fig. 5.2 shows a diagram of the human heart and its associated blood vessels.

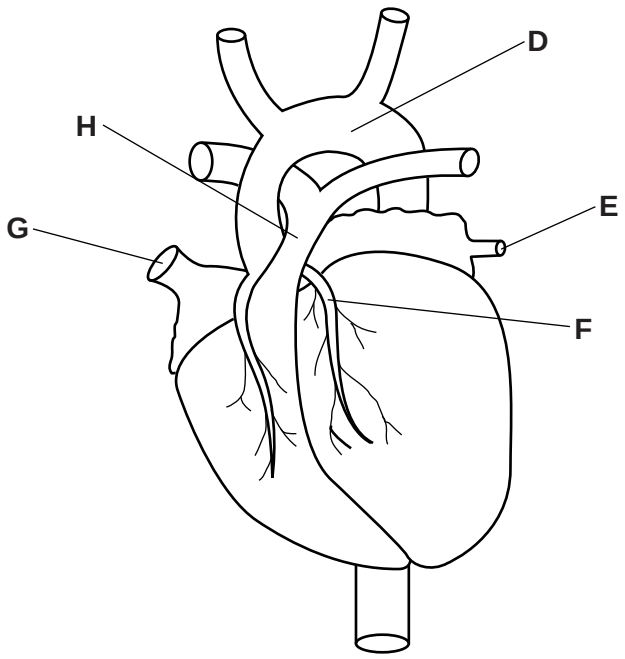


Fig. 5.2

On the diagram, **circle** the letter of the blood vessel which, when blocked, results in coronary heart disease. [1]

(d) The activity of the heart can be studied by monitoring the closing of the heart valves.

(i) Describe how this monitoring could be carried out.

.....

.....[1]

(ii) State the function of the heart valves.

.....

.....[1]

Fig. 5.3 shows heart activity (valves closing) over a period of ten seconds, for a person who is resting.

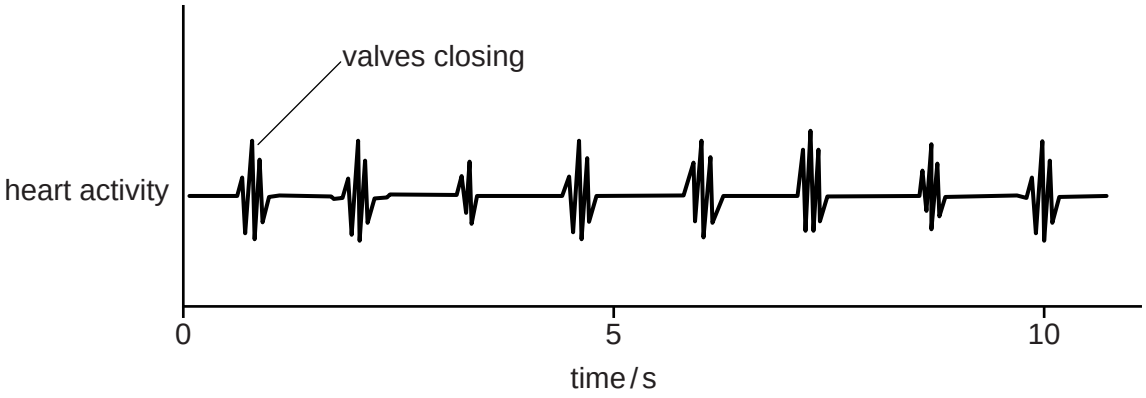


Fig. 5.3

(iii) State how many times the valves close in ten seconds.

.....[1]

(iv) Calculate the heart rate, in **beats per minute**, of the person being monitored. Show your working.

..... beats per minute [2]

(v) Suggest how the heart activity would be different if the person started to exercise.

.....

.....

.....[1]

[Total: 15]

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6 **(a)** Define the term *genetic engineering*.

.....

.....

.....

.....

.....[2]

(b) **(i)** Outline why bacteria are useful in genetic engineering.

.....

.....

.....

.....

.....[2]

(ii) Table 6.1 contains six statements about biological processes. Only **two** of these use genetic engineering. Identify these two processes. Place a tick in the box (✓) next to your choices.

Table 6.1

statement	uses genetic engineering
producing fruit juice using pectinase	
introducing genes into crop plants to provide additional vitamins	
selective breeding to produce organisms with desirable features	
placing a section of DNA into bacteria to produce human insulin	
using yeast to produce ethanol	
using a contraceptive implant as a method of birth control	

[2]

(c) Scientists have used genetic engineering to develop crop plants which are resistant to herbicides.

(i) Explain why farmers use herbicides.

.....

.....

.....

.....

.....[2]

(ii) A field contains genetically modified crop plants which are resistant to herbicides. It also contains some weeds. The plants are sprayed with herbicides.

State how the herbicide affects:

the weeds

.....

.....

the crop plants.

.....

.....
[2]

[Total: 10]

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7 Fig. 7.1 shows a newly planted oil palm plantation, with a rainforest in the background.

The land on which the oil palms are being grown has been cleared by removing part of the forest.



Fig. 7.1

(a) (i) State the term used to describe the removal of forests.

.....[1]

(ii) Removing rainforests puts some species at risk of extinction.

List **three other** undesirable effects of removing rainforests.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(b) The removal of rainforests has reduced the number of orangutans. Their numbers fell from 315 000 in 1900 to 50 000 in 2014.

(i) Calculate the percentage change in the number of orangutans between 1900 and 2014.

Show your working. Give your answer to the nearest whole number.

.....%
[3]

(ii) Outline **two** ways of conserving the orangutan species.

1 .....

.....

2 .....

.....
[2]

(c) Crop plants such as oil palm plants are often grown as monocultures.

Describe **one** negative impact to the environment of growing plants as monocultures.

.....

.....

.....[1]

[Total: 10]

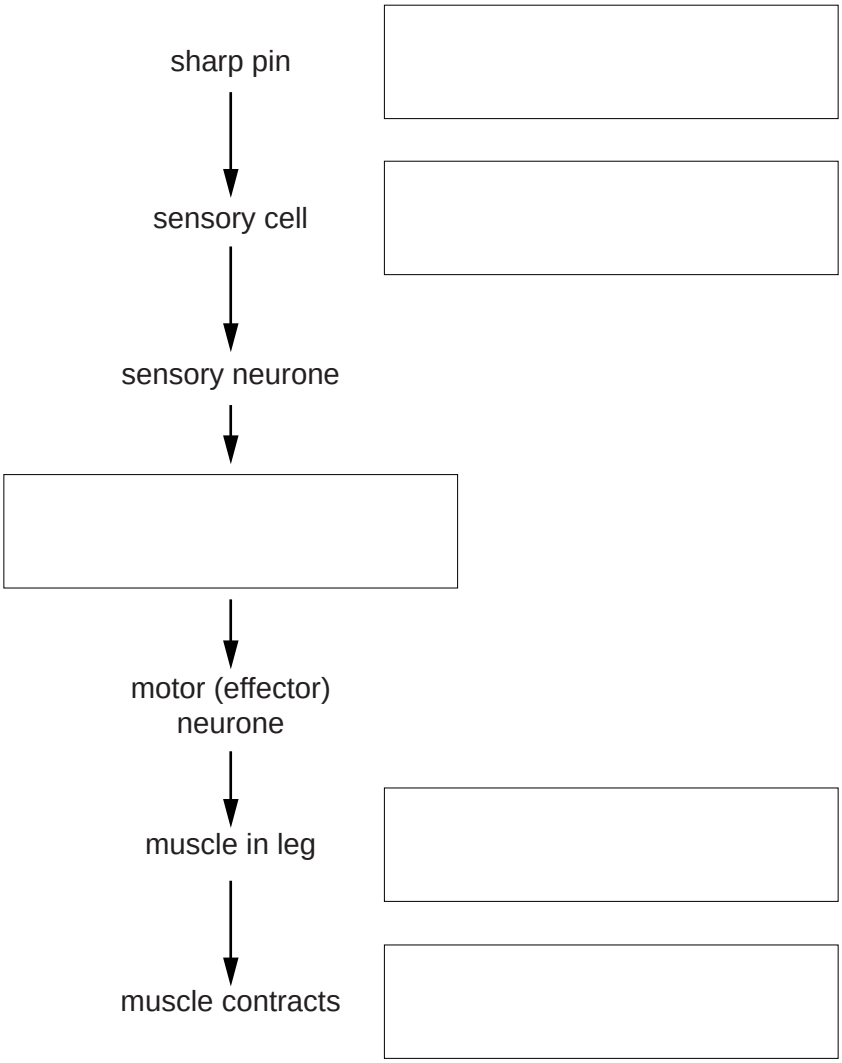
8 A student stood on a sharp pin, causing a nerve impulse to travel along a reflex arc in her nervous system.

Use words from the list to complete the boxes.

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

brain **relay** **neurone** **effector** **receptor**

response **spinal cord** **stimulus**



[5]

[Total: 5]

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