Cambridge IGCSE

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

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

*5734655204*

**BIOLOGY** **0610/32**

Paper 3 Theory (Core) **February/March 2019**

**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.

This syllabus is regulated 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.

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Cambridge Assessment International Education

**[Turn over**

**1** A balanced diet contains seven different groups of substances.

Three of these groups of substances are fats, fibre (roughage) and vitamins.

**(a)** State the names of **three** other groups of substances in a balanced diet.

1 .....

2 .....

3 .....

[3]

**(b)** The boxes on the left contain the names of conditions that can develop if the diet is not balanced for a long period of time.

The boxes on the right contain descriptions of how these conditions may be caused.

Draw **one** straight line from each box on the left to a box on the right to link the condition to its cause.

| **name of condition** | **description of cause** |
|---|---|
| constipation | diet contains very little fibre |
| obesity | diet very high in protein |
| scurvy | eating more food than is necessary |
| starvation | lack of enough food |
| | lack of fruits such as oranges |

[4]

[Total: 7]

**2** **(a)** Complete the sentences about aerobic and anaerobic respiration.

Use words or phrases from the list.

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

| | | | |
|---|---|---|---|
| **carbon dioxide** | **carbon monoxide** | | **energy** |
| **fatty acids** | **glycerol** | **guard** | **lactic acid** |
| **mesophyll** | **muscle** | **nitrogen** | **oxygen** |

Anaerobic respiration is different to aerobic respiration because ..... is not needed to break down glucose molecules.

The amount of ..... released from each glucose molecule is much smaller in anaerobic respiration.

Anaerobic respiration in humans takes place in ..... cells during vigorous exercise. It produces ..... from glucose.

A different form of anaerobic respiration takes place in yeast cells. Here the glucose is broken down into alcohol and ..... .

[5]

**(b)** State **two** ways in which the products of anaerobic respiration in yeast can be used by humans.

1 .....

2 .....

[2]

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**[Turn over**

**(c)** Fig. 2.1 shows the percentage of energy provided by anaerobic respiration when athletes run in races of different distances.

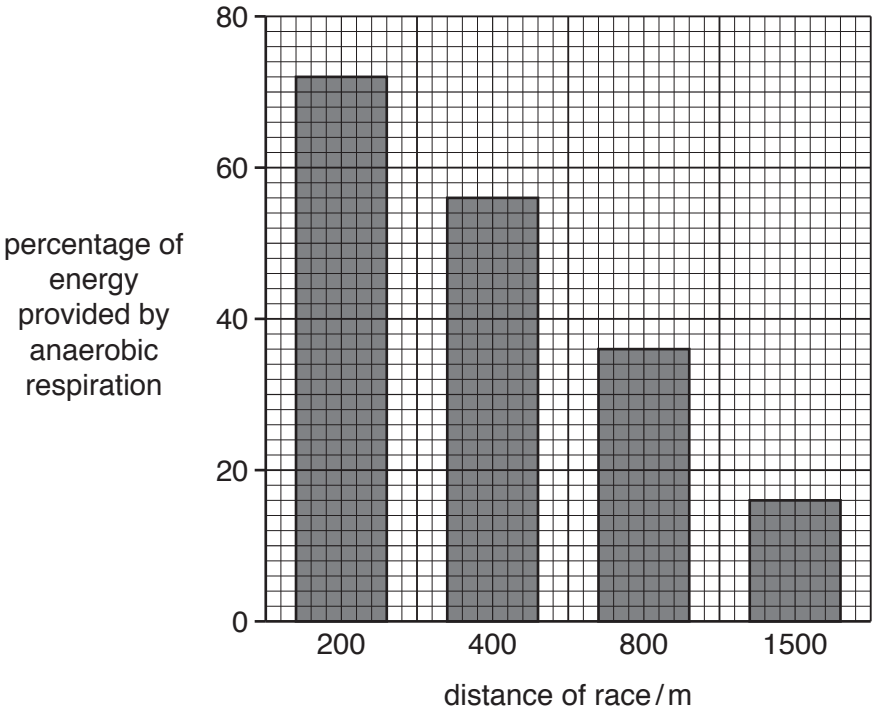



**Fig. 2.1**

Describe the results shown in Fig. 2.1.

Use the data to support your answer.

.....

.....

.....

.....

..... [2]

[Total: 9]

**3** **(a)** Fig. 3.1 shows the eye of a person in normal daylight.

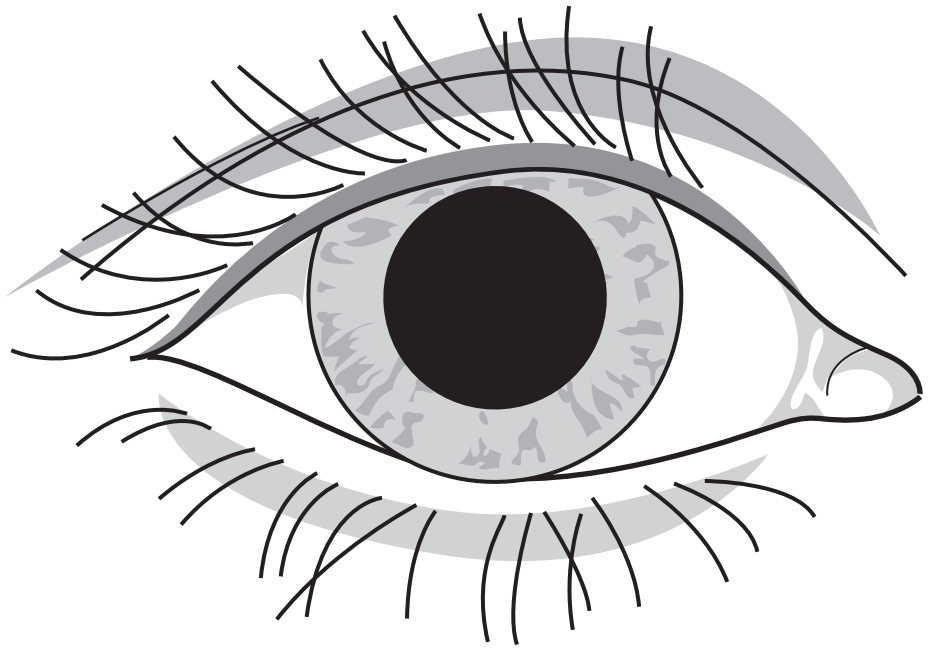


**Fig. 3.1**

Complete Fig. 3.2 by drawing the pupil to show the effect of shining a bright light into the eye.

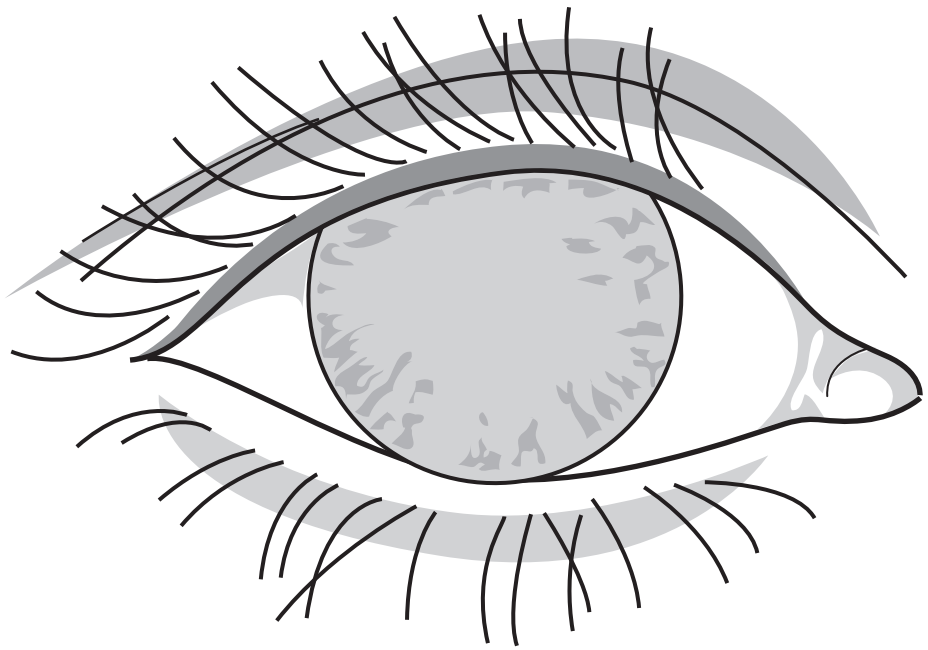


**Fig. 3.2**

[1]

**(b) (i)** Fig. 3.3 shows the names of five structures involved in a reflex arc.

Complete Fig. 3.3 by drawing **four** arrows to show the pathway and direction a nerve impulse travels during a reflex action.

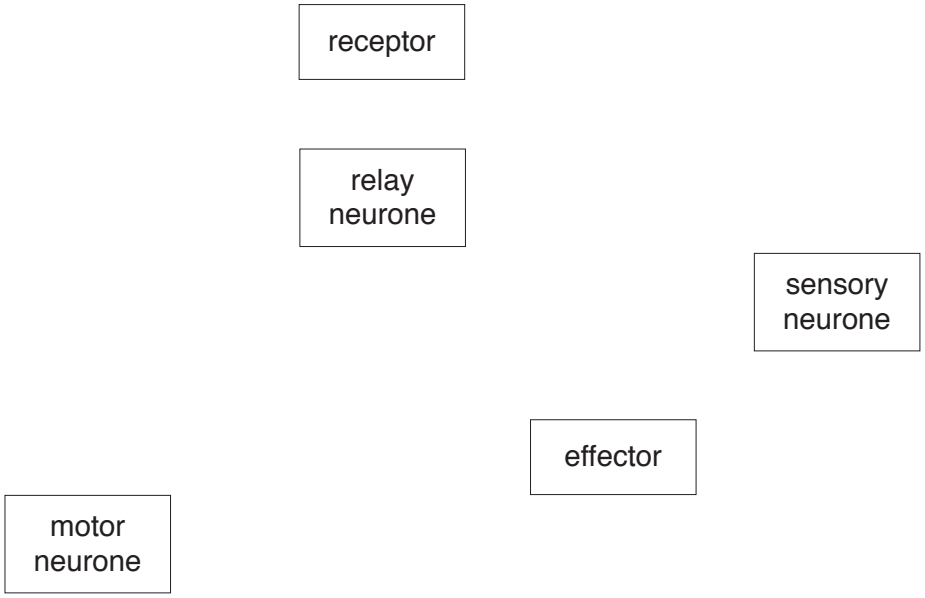



**Fig. 3.3**

[3]

**(ii)** State the name of the junction between two neurones.

..... [1]

**(c)** The body is regulated by both the nervous system and by hormones.

Table 3.1 shows information about the names of hormones, where they are produced and their actions in the body.

Complete Table 3.1.

**Table 3.1**

| name of hormone | where the hormone is produced in the body | action the hormone has in the body |
|---|---|---|
| insulin | pancreas | |
| | adrenal gland | widened pupils, increased heart rate, raised blood glucose concentration |
| testosterone | | |

[4]

[Total: 9]

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**4** Modern technology has resulted in increased food production.

**(a)** State **three** examples of modern technology that are used to increase food production.

1 .....

2 .....

3 .....

[3]

**(b)** Many farms grow one type of crop plant on a large area of land. This type of crop production is called large-scale monoculture.

State **two** negative impacts to an ecosystem of large-scale monocultures.

1 .....

.....

2 .....

.....

[2]

[Total: 5]

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**[Turn over**

**5** **(a)** State **one** adaptive feature of an egg cell and **one** adaptive feature of a sperm.

egg cell .....

.....

sperm .....

.....

[2]

**(b)** Some actions can damage the health of a fetus during pregnancy.

State **two** actions a woman should avoid during pregnancy.

1 .....

.....

2 .....

.....

[2]

**(c)** Fig. 5.1 shows a fetus in its mother's body shortly before it is born.

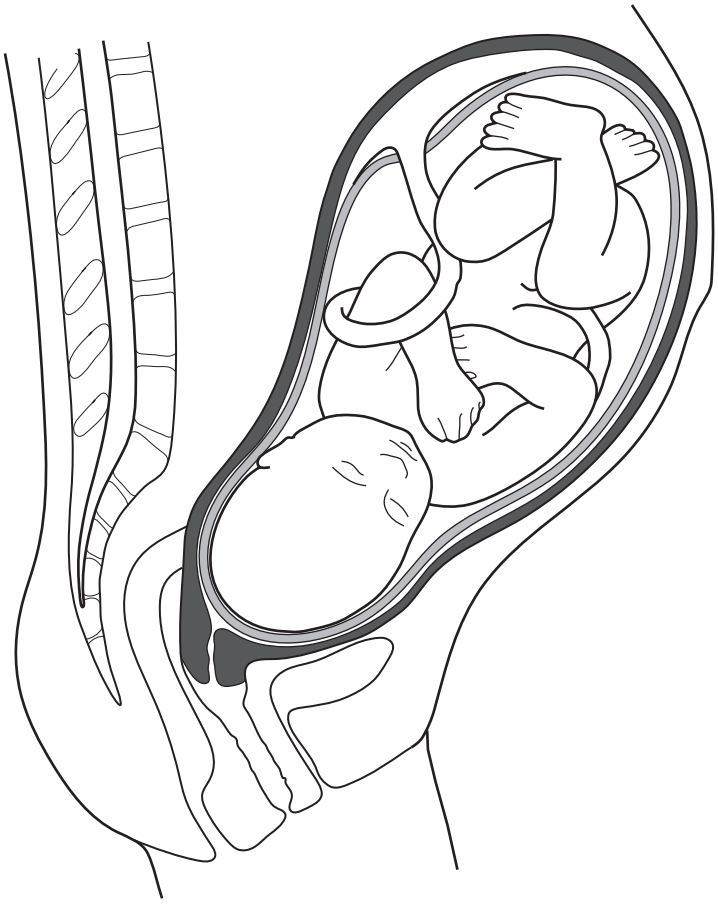


**Fig. 5.1**

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**(i)** State the functions of the placenta.

.....

.....

.....

.....

..... [2]

**(ii)** Describe **three** events, other than pain, that occur in the mother's body during the process of labour and birth.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

[Total: 9]

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**6** Fig. 6.1 shows a section through a plant root.

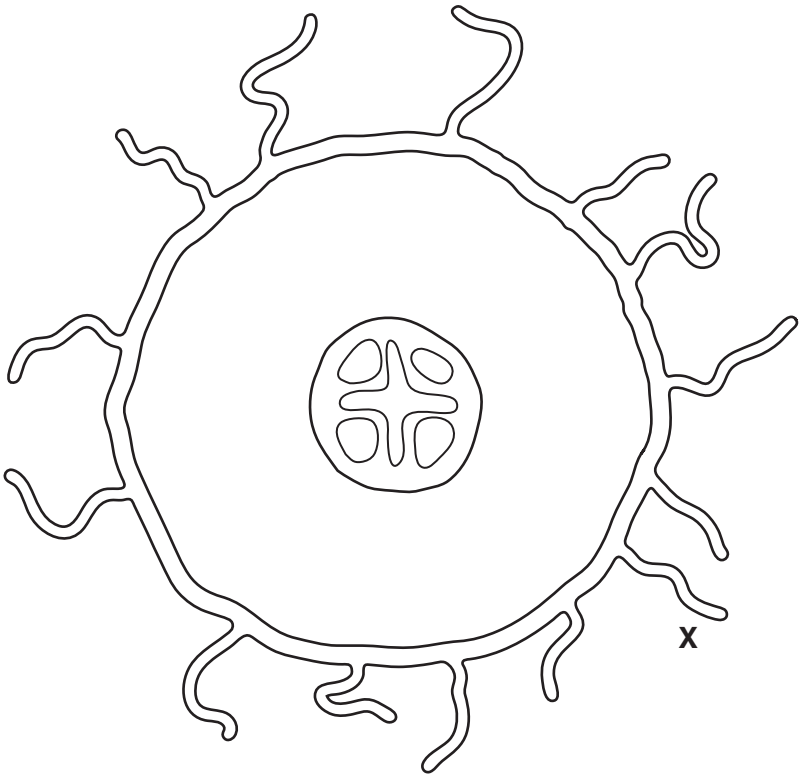



**Fig. 6.1**

**(a) (i)** The **X** on Fig. 6.1 represents a molecule of water.

On Fig. 6.1, draw a line from the **X** to show the pathway this water molecule takes to pass into the tissue that transfers it to the leaves. [1]

**(ii)** State the name of the process by which the water molecule moves into the root.

..... [1]

**(iii)** State the name of the tissue that transports the water to the leaves.

..... [1]

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**[Turn over**

**(b)** Fig. 6.2 shows the apparatus used in an investigation.

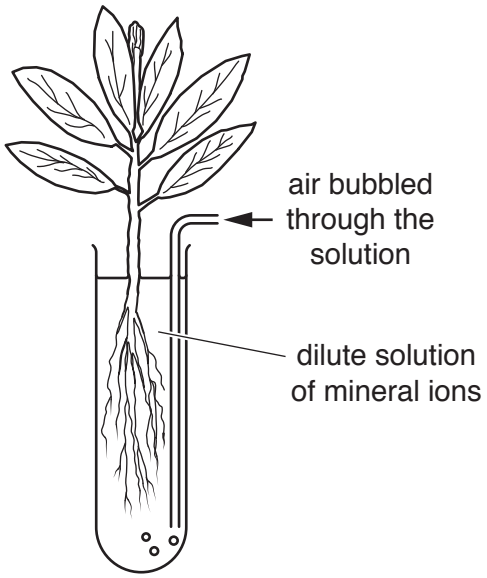



**Fig. 6.2**

In the investigation, several sets of this apparatus were set up.

Each set of apparatus was placed in a different temperature.

The rate of mineral ion uptake by the plants was measured.

The results are shown in Fig. 6.3.

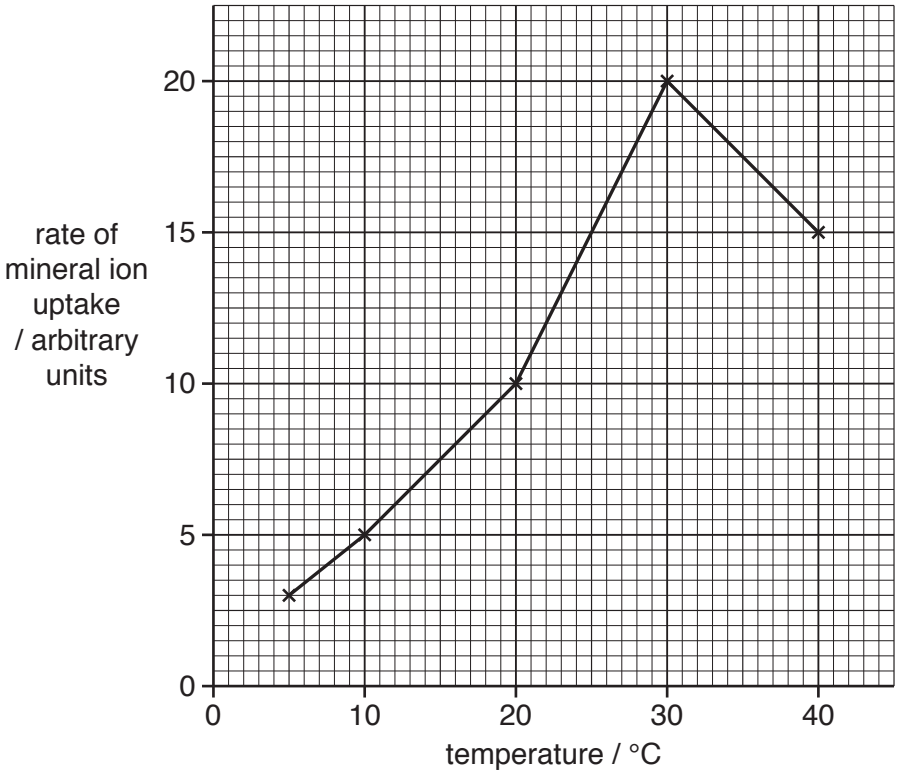



**Fig. 6.3**

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**(i)** State the rate of mineral ion uptake at 25 °C in Fig. 6.3.

..... arbitrary units [1]

**(ii)** Describe **and** explain the results shown in Fig. 6.3.

Use the data to support your answer.

.....

.....

.....

.....

.....

.....

.....

..... [4]

**(c)** State the name of **one** mineral ion that plants absorb through their roots and state why the plants need this mineral ion.

name of mineral ion .....

needed for .....

.....

[2]

[Total: 10]

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**[Turn over**

**7** **(a)** Fig. 7.1 shows an external view of the heart of a person who has coronary heart disease.

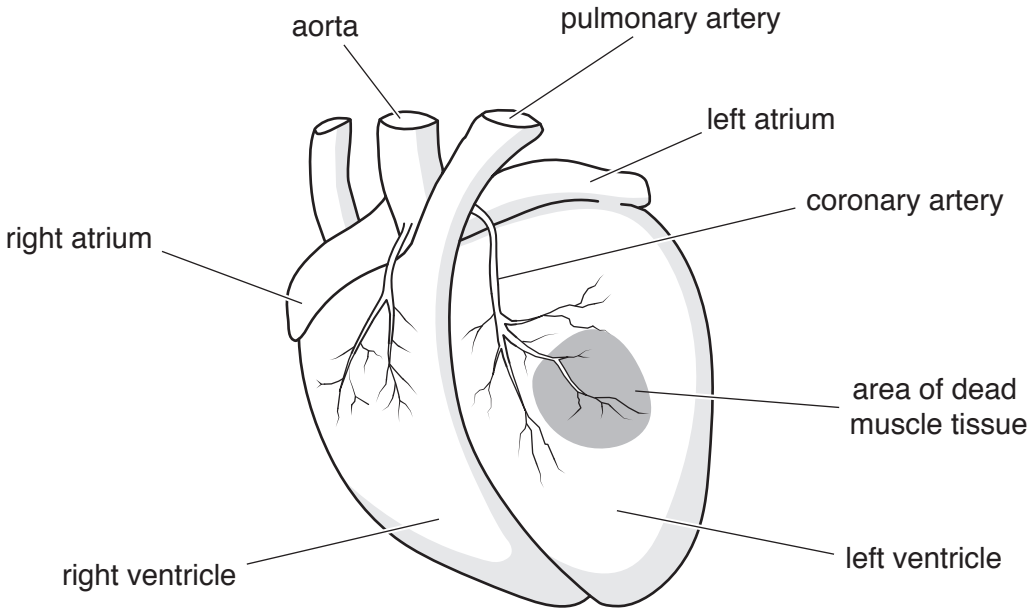



**Fig. 7.1**

**(i)** On Fig. 7.1 three arteries are labelled.

State the name of **two** other types of blood vessel.

1 .....

2 .....
[2]

**(ii)** Describe the structure of an artery.

.....

.....

.....

.....

..... [2]

**(b) (i)** Fig. 7.1 shows an area of dead muscle tissue.

Describe what is meant by the term coronary heart disease and suggest why the heart muscle tissue has died.

.....

.....

.....

.....

.....

.....

..... [3]

**(ii)** One factor that increases the risk of developing coronary heart disease is having a diet that contains a lot of fat.

State **three other** factors that increase the risk of a person developing coronary heart disease.

1 .....

2 .....

3 .....

[3]

[Total: 10]

**8** Table 8.1 lists some processes carried out by living organisms.

Place a tick (✓) in a box to show the type of process that occurs in animals, occurs in plants, or occurs in both.

An example has been done for you.

**Table 8.1**

| name of process | occurs in animals | occurs in plants |
|---|---|---|
| absorption | ✓ | ✓ |
| diffusion | | |
| egestion | | |
| photosynthesis | | |
| respiration | | |
| sexual reproduction | | |
| transpiration | | |

[6]

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**9** **(a)** Define the term *pathogen*.

.....

..... [1]

**(b)** The body has defences against pathogens.

The defences can be grouped into three types and these are listed in Table 9.1.

Complete Table 9.1 by giving a specific example for each type of defence.

**Table 9.1**

| type of body defence | example |
|---|---|
| mechanical barrier | |
| chemical barrier | |
| cells | |

[3]

**(c)** **(i)** Suggest **two** reasons why it is important for people to wash their bodies frequently.

1 .....

.....

2 .....

.....

[2]

**(ii)** A student's shirt has food stains on it.

The food stain contains proteins and fats.

The shirt is washed in a biological washing powder.

Explain why a biological washing powder is effective at removing the stain.

.....

.....

.....

..... [2]

**(d)** Fig. 9.1 shows an example of an unhygienic practice in a kitchen.



**Fig. 9.1**

Explain why hygienic food preparation is important.

.....

.....

.....

.....

..... [2]

[Total: 10]

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**10** **(a)** Define the term *drug*.

.....

.....

.....

..... [2]

**(b)** State the name of **one** lung disease linked to smoking cigarettes.

..... [1]

**(c)** Alcohol is a drug.

State the name of the organ in the body that breaks down alcohol.

..... [1]

**(d)** State the name of the group of drugs that are used to treat bacterial infections.

..... [1]

[Total: 5]

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