



Rewarding Learning

General Certificate of Secondary Education

Centre Number

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Candidate Number

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Double Award Science: Biology

Unit B1

Foundation Tier

MV18

[GDW11]

Assessment

Assessment Level of Control Tick the relevant box (✓)

Time

Controlled Conditions	
Other	

1 hour, plus your additional time allowance.

Instructions to Candidates

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

You must answer the questions in the spaces provided.

Do not write on blank pages.

Complete in black ink only.

Answer **all seven** questions.

Information for Candidates

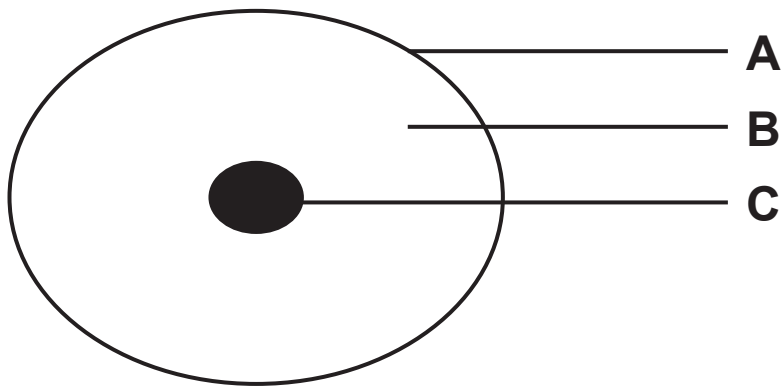
The total mark for this paper is 60.

Figures in brackets printed at the end of each question indicate the marks awarded to each question or part question.

Quality of written communication will be assessed in

Question **6(a)**.

1 (a) The diagram below shows an animal cell.



(i) Name parts **A**, **B** and **C**. [3 marks]

A _____

B _____

C _____

(ii) Give the function of part **C**. [1 mark]

A bacterial cell contains some structures **not** found in an animal cell.

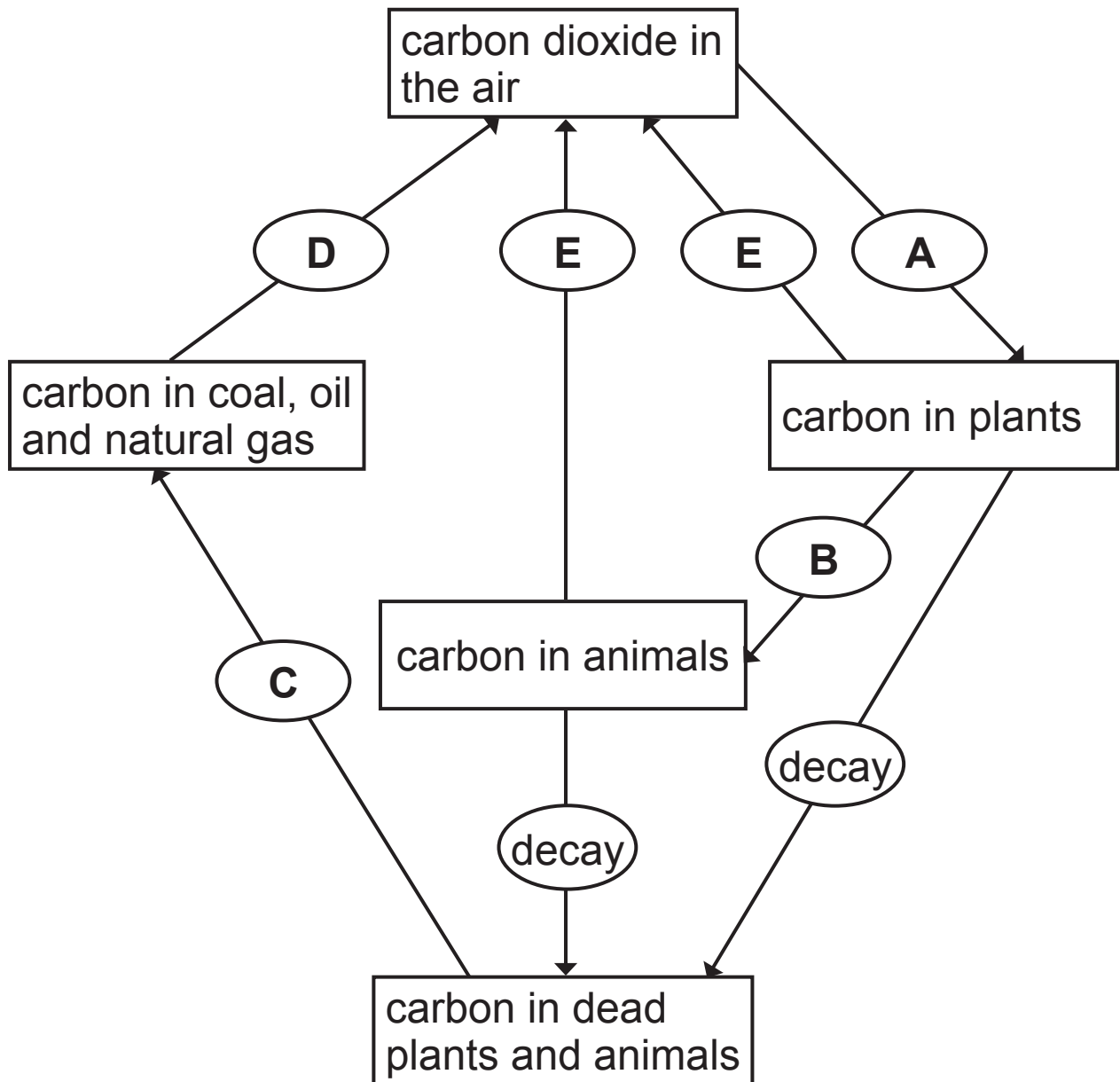
(b) Name **two** of these structures. [2 marks]

1. _____

2. _____

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(Questions continue overleaf)

2 The diagram below shows the carbon cycle.



(a) Name the **substance** in leaves of plants which is needed to carry out process **A**. [1 mark]

(b) Name processes B, C and D. [3 marks]

B _____

C _____

D _____

(c) Process E is respiration.

(i) Name the biological molecule, used in respiration, that contains carbon. [1 mark]

(ii) Name the gas needed for aerobic respiration. [1 mark]

- 3** Ten pupils investigated their reaction times.
A light was switched on and the time taken for each pupil to switch the light off was recorded as their reaction time.
The reaction times, in seconds, for these 10 pupils are given below.

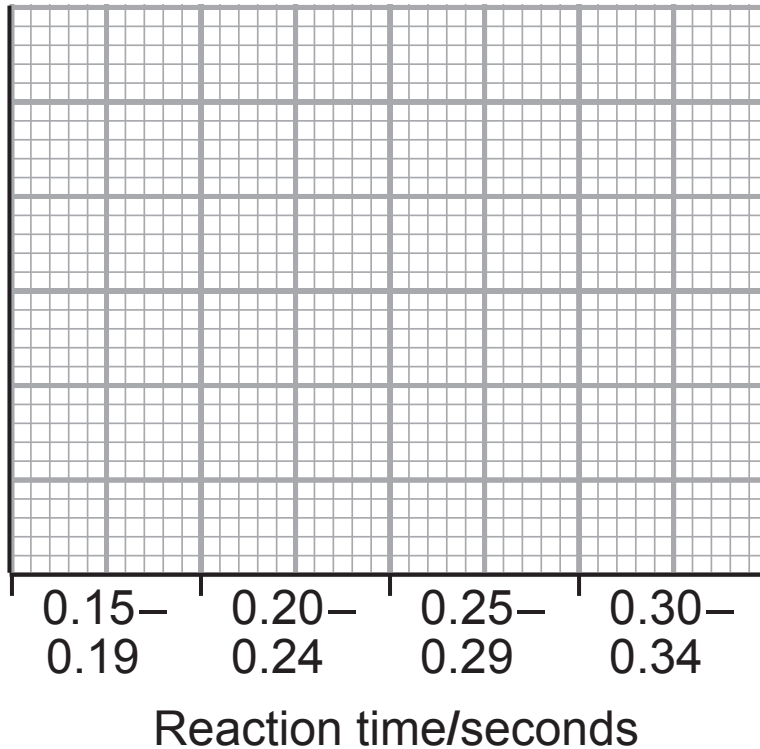
0.15
0.29
0.20
0.18
0.24
0.22
0.26
0.23
0.34
0.22

- (a)** Complete the tally chart below for the reaction times of the pupils by writing in the empty boxes. [3 marks]

The first row in the tally chart has been completed for you.

Reaction time/ seconds	Tally	Number of pupils
0.15–0.19		2
0.20–0.24		
0.25–0.29		
0.30–0.34		

- (b) Use the results from the tally chart to draw a histogram on the grid below. [3 marks]
- Add a scale on the y axis.
 - Label the y axis.
 - Plot and **shade** the bars.



The reaction times for the pupils were the result of a voluntary action.

- (c) How would the reaction times for the pupils differ if they were the result of a reflex action, rather than a voluntary action? [2 marks]
Explain your answer.

- 4 (a) Complete the sentences below about the structure of the excretory system. [4 marks]

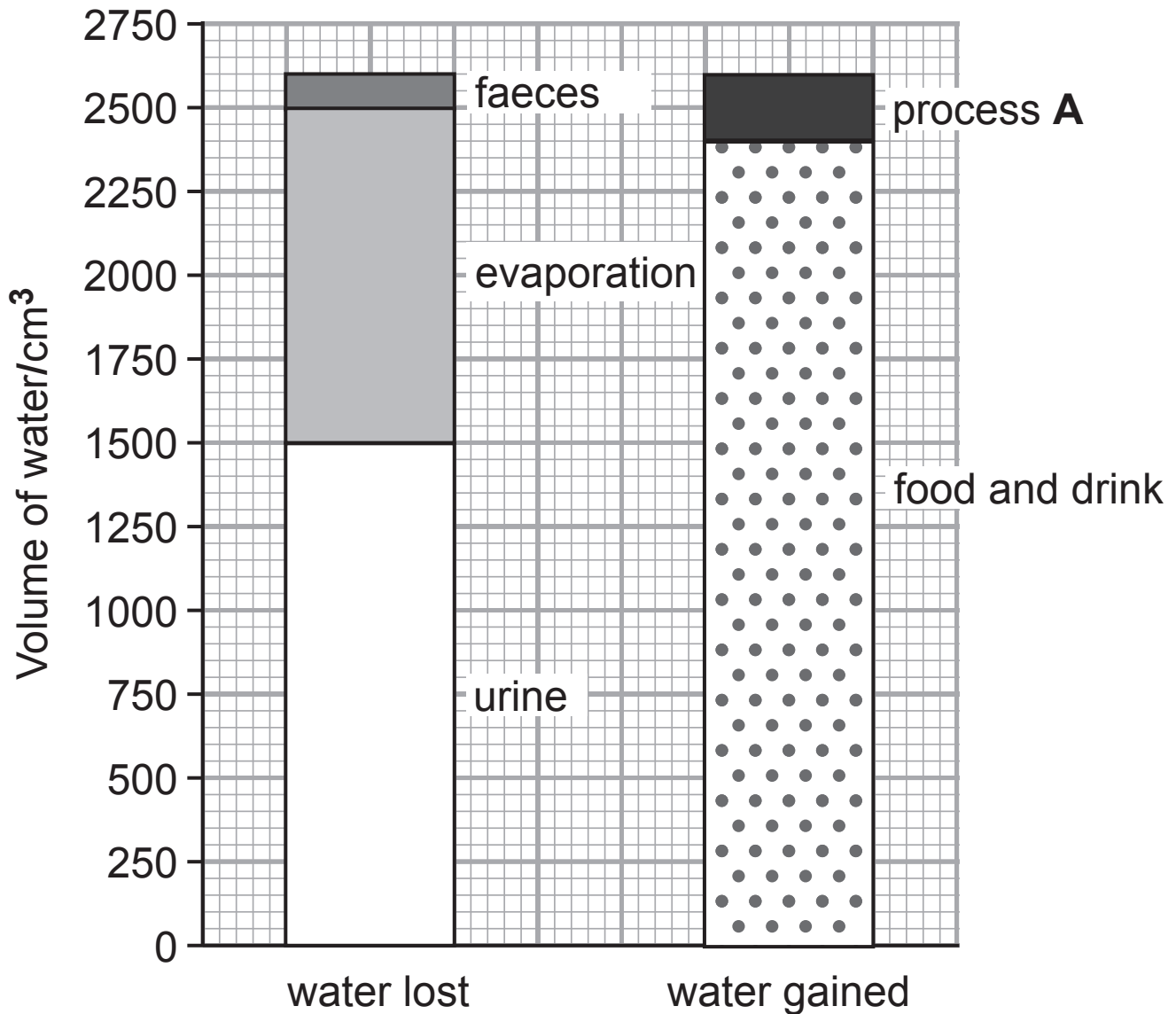
Choose your answers from the words below.

liver
kidney
urethra
pancreas
bladder
ureters
medulla

The _____ is an organ that has an outer region called the cortex and an inner region called the _____.

Urine moves into the pelvis and is then carried down the _____ to the _____ where it is stored.

(b) The bar chart below shows water lost and water gained by a person during one day.



(i) Give **two** ways water is lost by evaporation from the body. [2 marks]

1. _____

2. _____

(ii) The body gains water from food and drink and one other process (**A**) shown on the bar chart.

Name process **A**. [1 mark]

(iii) Use the information in the bar chart opposite to calculate the **simplest** ratio of water gained from food and drink compared to water gained by process A. [3 marks]

Show your working.

Simplest ratio _____ : _____

A woman is exercising vigorously. She does not drink any water while exercising.

(c) Complete the sentences below to describe what happens in her kidneys during this exercise. [3 marks]
Choose from the words in the list.

decreases
stays the same
increases

The volume of water reabsorbed by the kidneys

_____.

The volume of urine produced

_____.

The concentration of urine produced

_____.

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(Questions continue overleaf)

5 Four features of respiratory surfaces and their role in increasing gas exchange in animals are given below.

(a) Draw a straight line to link each feature of a respiratory surface to its role in increasing gas exchange.

[3 marks]

Feature

Role in increasing gas exchange

permeable cell membrane

maintains a diffusion gradient

good blood supply

allows gases to pass through

thin cells

increases the surface area

rounded shape of air sac

short diffusion distance

(b) (i) Name the small pores on the surface of a **leaf** that allow gases to enter. [1 mark]

(ii) Describe the function of the intercellular air spaces in a leaf. [1 mark]

(c) Spongy mesophyll cells contain fewer chloroplasts than palisade mesophyll cells.

(i) Suggest why. [1 mark]

(ii) Give **one** difference between the shape of spongy mesophyll cells and palisade mesophyll cells. [1 mark]

6 Enzymes are found in the digestive system.

- (a)** • Name the substrates and products of the enzymes protease and lipase.
- Describe the lock and key model of enzyme action.

In this question you will be assessed on your written communication skills, including the use of specialist scientific terms.

- Name the substrates and products of the enzymes protease and lipase.

Protease _____

Lipase _____

- Describe the lock and key model of enzyme action.
[6 marks]

- (b) Give **two** factors that affect the rate of enzyme activity.
[2 marks]

1. _____

2. _____

7 Scotland has several national parks. These parks have habitats that contain some rare species. These include the animals capercaillie and pine martens, as well as rare plants such as blaeberry. The photographs below show a capercaillie and a pine marten.

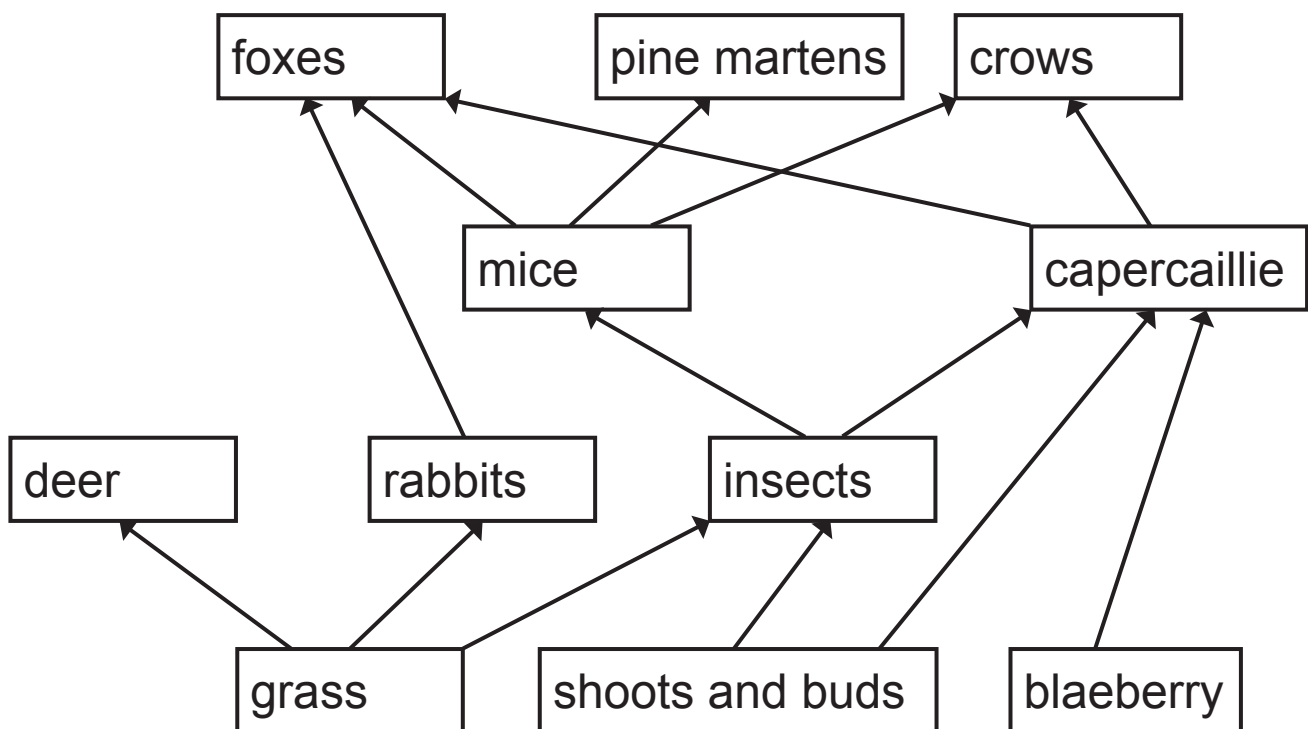
capercaillie



pine marten



(a) The diagram below shows part of a food web from a habitat in one of the national parks in Scotland.



(i) Give the number of trophic levels in this food web.
[1 mark]

(ii) Use the food web to name the **three** species that feed on the same secondary consumer.

Name this secondary consumer. [2 marks]

Secondary consumer _____

Species 1 _____

Species 2 _____

Species 3 _____

(iii) Use the food web to describe and explain what you would expect to happen to the number of pine martens if the numbers of shoots and buds decreased. [3 marks]

Description _____

Explanation _____

(iv) Use the food web to give **one** predator of the capercaillie. [1 mark]

(b) In 2011, the population of capercaillie in Scotland was 1285.

In 2017, the population of capercaillie in Scotland was 1114.

- (i)** Calculate the percentage (%) decrease in the capercaillie population over this period. [3 marks]

Show your working.

Give your answer to **two** decimal places.

_____ %

- (ii)** Suggest **two** reasons for the decrease in the capercaillie population. [2 marks]

1. _____

2. _____

This is the end of the question paper

SOURCES

Q2.....Source: *Principal Examiner*

Q4(b)Source: *Principal Examiner*

Q7.....© *Andy Trowbridge / Nature Picture Library / Science Photo library*

Q7© *Scotland The Big Picture / Nature Picture Library / Science photo Library*

Q7(a)Source: *Principal Examiner*

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	

Total Marks	
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Examiner Number

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