Cambridge Assessment International Education

Cambridge IGCSE™

BIOLOGY **0610/12**

Paper 1 Multiple Choice (Core) **October/November 2021**

45 minutes

You must answer on the multiple choice answer sheet.

You will need: Multiple choice answer sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)

INSTRUCTIONS

- There are **forty** questions on this paper. Answer **all** questions.
- For each question there are four possible answers **A**, **B**, **C** and **D**. Choose the **one** you consider correct and record your choice in soft pencil on the multiple choice answer sheet.
- Follow the instructions on the multiple choice answer sheet.
- Write in soft pencil.
- Write your name, centre number and candidate number on the multiple choice answer sheet in the spaces provided unless this has been done for you.
- Do **not** use correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.

INFORMATION

- The total mark for this paper is 40.
- Each correct answer will score one mark.
- Any rough working should be done on this question paper.

IB21 11_0610_12/4RP
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[Turn over

1 All living things can remove toxic materials and other substances that are in excess of requirements.

What is this process called?

A egestion

B excretion

C nutrition

D respiration

2 The table shows features of some animals.

Which animal is a mammal?

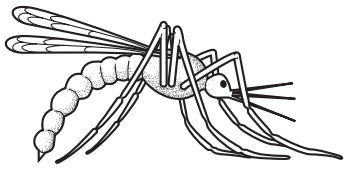
	gills	hair	scales	wings
A	✓	✗	✗	✗
B	✓	✗	✓	✗
C	✗	✓	✗	✓
D	✗	✗	✓	✓

key

✓ = present

✗ = absent

3 The diagram shows an animal.



What is the animal?

1 animal with a vertebral column ..... vertebrate

animal with an exoskeleton ..... go to 2

2 no distinct head, thorax and abdomen ..... **A**

distinct head, thorax and abdomen ..... go to 3

3 eye occupies less than one third of the head ..... **B**

eye occupies more than one third of the head ..... go to 4

4 wings are wider than they are long ..... **C**

wings are longer than they are wide ..... **D**

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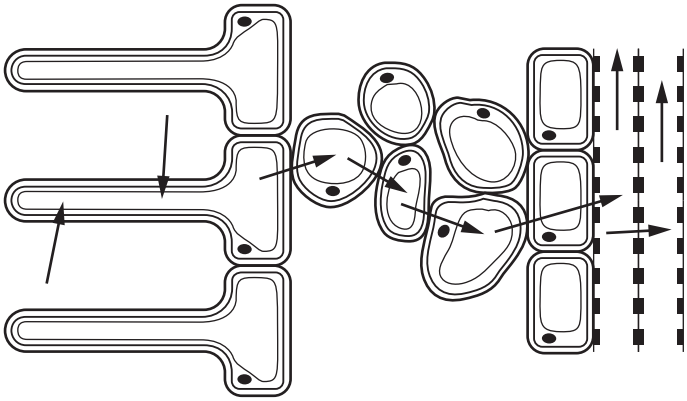
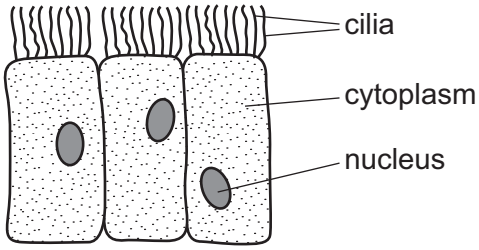
4 The diagram shows some tissues in part of a plant root. The arrows represent the movement of water into and across the plant root tissues.



How many different tissues are shown?

A 2 **B** 4 **C** 5 **D** 7

5 The diagram shows some cells.



Where are these cells found?

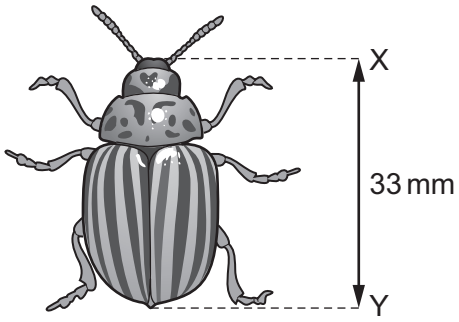
A alimentary canal

B blood

C bronchus

D plant roots

6 The diagram shows a beetle.



The actual size of the beetle between X and Y is 15 mm.

What is the magnification of the image?

A ×0.45 **B** ×2.2 **C** ×48 **D** ×495

7 Which statement about diffusion is correct?

A The process requires energy from respiration.

B The particles must cross a cell membrane.

C The net movement of particles is up a concentration gradient.

D The process involves the random movement of particles.

8 The cells in a plant root have a higher concentration of magnesium ions than in the surrounding soil.

Which process will move the magnesium ions into the root?

A active transport

B diffusion

C osmosis

D transpiration

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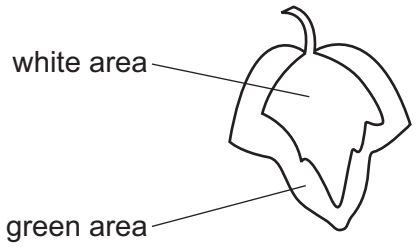
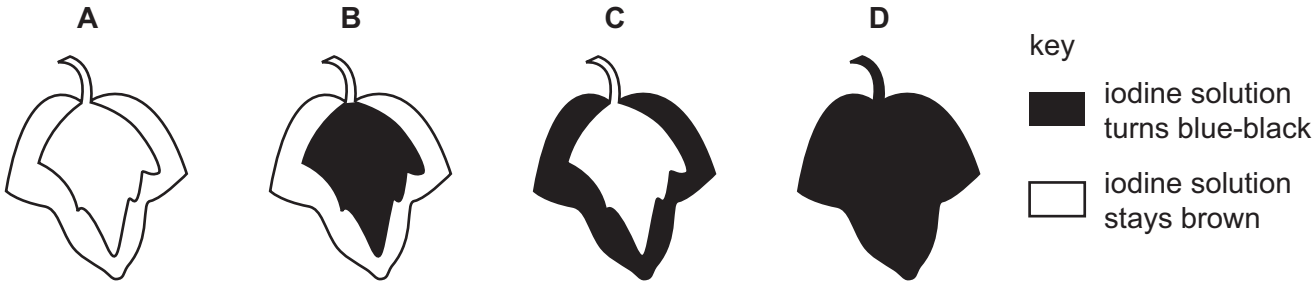
9 In a photosynthesis experiment, a plant is left in bright sunlight for several hours. A leaf is then removed from the plant and tested for starch, using iodine solution.

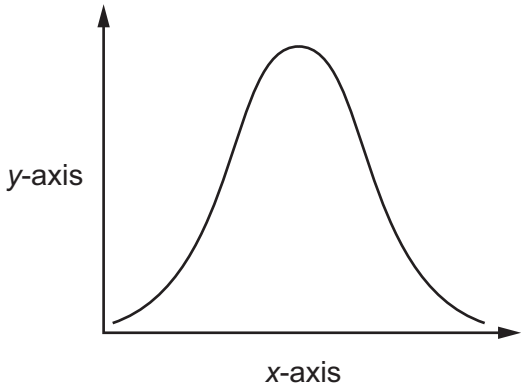
The diagram shows the leaf from the plant that was used in the experiment.



Which diagram shows the result of the experiment?



10 An experiment was carried out to investigate the effect of pH on enzyme action. The graph shows the results.

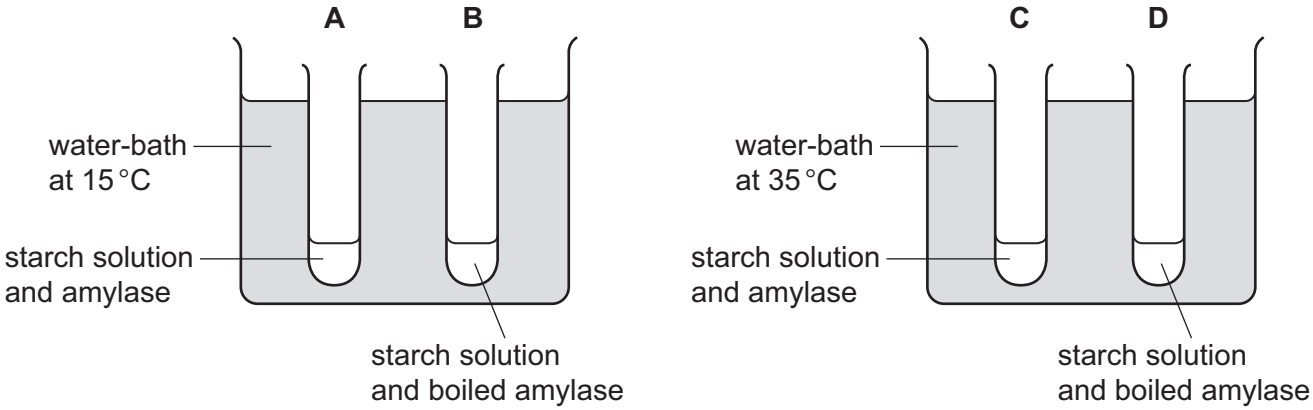


What are the labels for the *x*-axis and the *y*-axis?

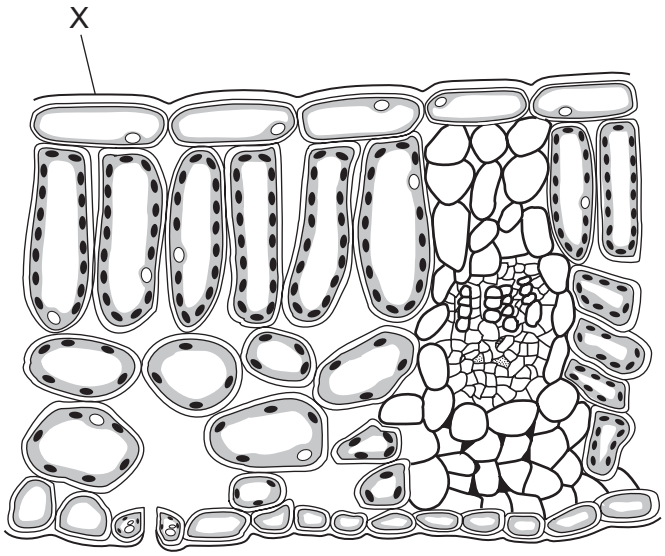
	x-axis	*y*-axis
A	pH	rate of reaction
B	pH	time
C	rate of reaction	pH
D	time	pH

11 Four test-tubes were set up as shown in the diagram.

In which test-tube is the starch digested most quickly?



12 The diagram shows a cross-section through a leaf.



What is the structure labelled X?

A cuticle

B palisade mesophyll

C spongy mesophyll

D stomata

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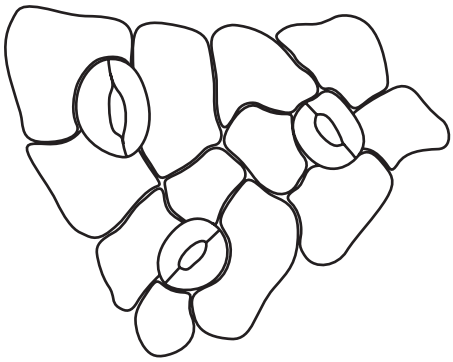
13 The diagram shows the surface view of part of the epidermis of a leaf.



How many guard cells are present?

A 0 **B** 3 **C** 6 **D** 12

14 What is the dietary importance of carbohydrates?

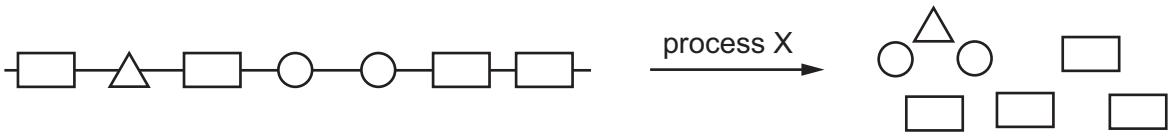
A to promote healthy bones and teeth

B to make fats

C to provide energy for the body

D to make proteins

15 The diagram shows a large food molecule changing into smaller molecules.



What is process X?

A absorption

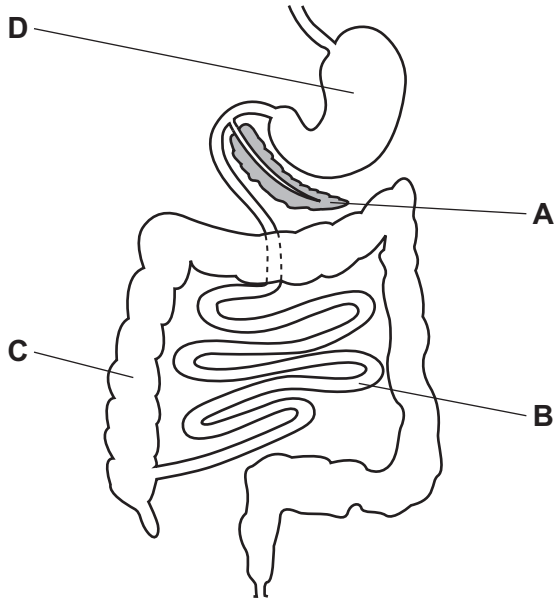
B chewing

C digestion

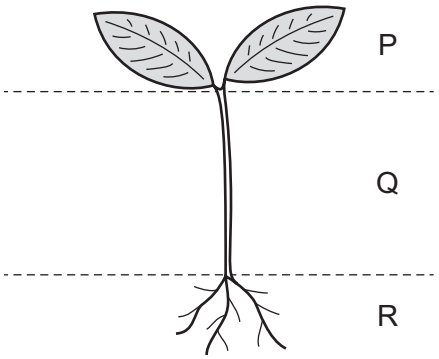
D secretion

16 The diagram shows part of the alimentary canal and associated organs.

Where does most water absorption take place?



17 The diagram shows a young plant.



In which parts of the plant are xylem vessels found?

A P, Q and R **B** P and Q only **C** Q and R only **D** Q only

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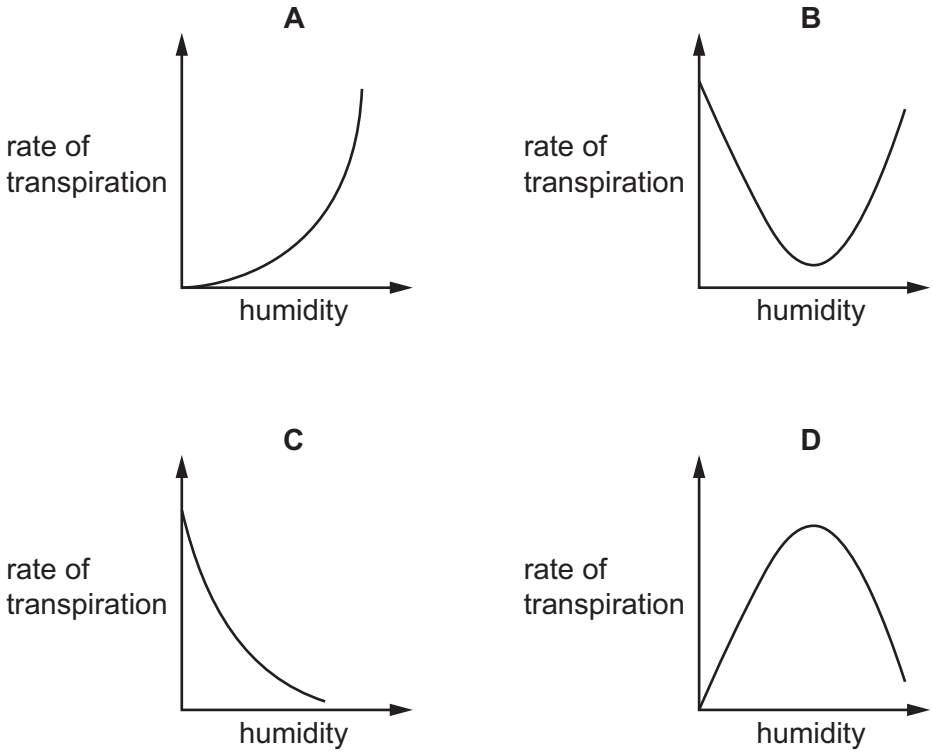
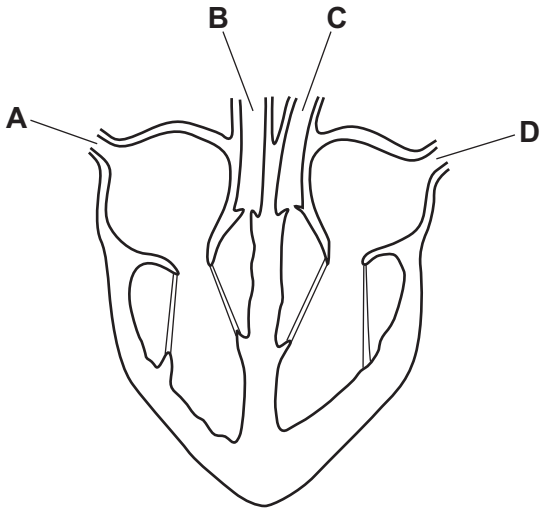
18 Which graph shows the effect of increasing humidity on the rate of transpiration?



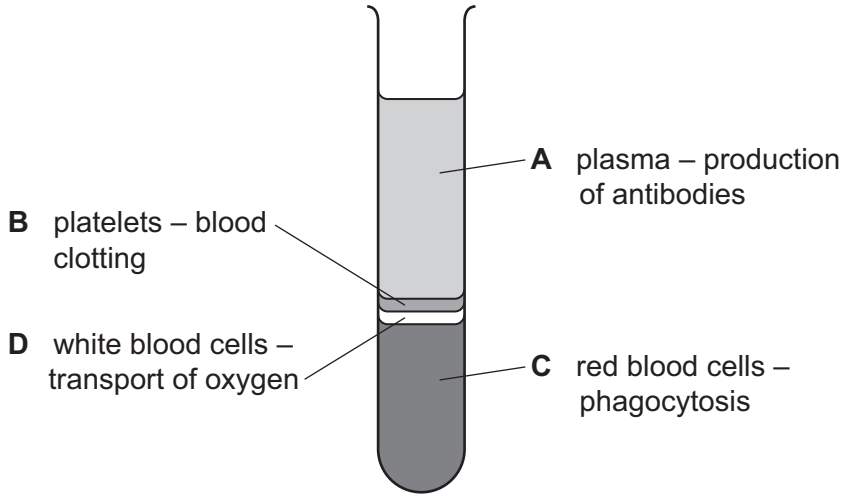
19 The diagram shows a section through a mammalian heart.

Which part carries blood directly from the lungs?



20 The diagram shows the four components of blood separated into layers.

Which component is labelled with the correct function?



21 Some features that help to defend the body against pathogens are listed.

1 mucus

2 skin

3 stomach acid

4 phagocytosis

Which features can prevent pathogens entering body tissues?

A 1, 2, 3 and 4

B 1, 2 and 3 only

C 2 and 3 only

D 4 only

22 Which shows the correct order of structures that air travels through when a human breathes in?

A alveoli → trachea → bronchioles → bronchi

B trachea → bronchi → bronchioles → alveoli

C alveoli → bronchioles → bronchi → trachea

D trachea → bronchioles → bronchi → alveoli

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23 Which chemicals are needed to release energy in aerobic respiration?

A carbon dioxide and glucose

B carbon dioxide and water

C oxygen and glucose

D oxygen and water

24 Yeast is an organism used in the production of biofuels.

Which statement describes why yeast is used for biofuel production?

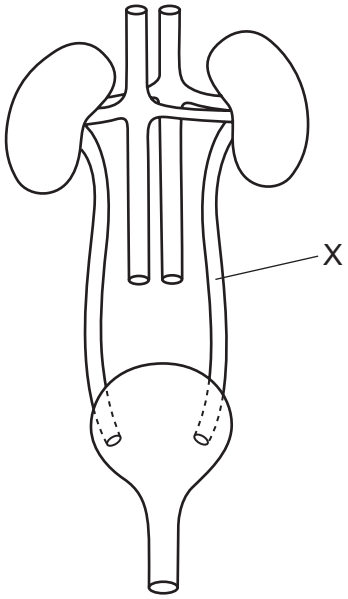
A Yeast respires aerobically to produce carbon dioxide.

B Yeast respires aerobically to produce carbon dioxide and ethanol.

C Yeast respires anaerobically to produce carbon dioxide.

D Yeast respires anaerobically to produce carbon dioxide and ethanol.

25 The diagram shows part of the excretory system of a female mammal.



What is tube X?

A ureter

B urethra

C uterus

D vein

26 The structures listed are part of the nervous system.

1 brain

2 effector

3 receptor

4 relay neurone

In a reflex arc, which structures are connected to a motor neurone by synapses?

A 1 and 2 **B** 1 and 3 **C** 2 and 4 **D** 3 and 4

27 A student investigated the effect of changing light intensity on pupil diameter in the eye.

The table shows the results.

starting pupil diameter / mm	final pupil diameter / mm
8	2

Which explanation for the student's results is correct?

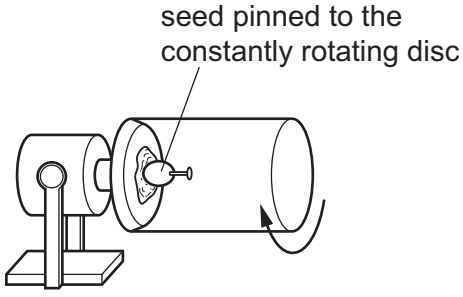
A A reduced light intensity reduced the pupil diameter by 75%.

B A reduced light intensity reduced the pupil diameter by 25%.

C An increased light intensity reduced the pupil diameter by 75%.

D An increased light intensity reduced the pupil diameter by 25%.

28 A seed is placed and grown on a rotating disc, as shown.



Which diagram shows the appearance of the seedling shoot after seven days?

A **B** **C** **D**

29 Which substance can be used to treat a bacterial infection?

A adrenaline

B antibiotics

C antigens

D insulin

30 Fertilisation is defined as the fusion of the ……X…… of two gametes to form a ……Y…… .

Which row completes the sentence?

	X	Y
A	alleles	sex cell
B	alleles	zygote
C	nuclei	sex cell
D	nuclei	zygote

31 What is the correct description of pollination?

A Pollen grains are transferred from the anther to the ovary.

B Pollen grains are transferred from the anther to the stigma.

C Pollen grains are transferred from the ovary to the stigma.

D Pollen grains are transferred from the stamen to the anther.

32 HIV is a sexually transmitted infection (STI).

Which methods could be used to reduce the spread of HIV?

1 breast-feed babies

2 education about how HIV is spread

3 provide easy access to condoms

4 provide needle exchange schemes for drug users

A 1, 2 and 3 **B** 1, 2 and 4 **C** 1, 3 and 4 **D** 2, 3 and 4

33 Which of these determine the sex of humans?

A X and Y genes

B X and Y alleles

C X and Y chromosomes

D X and Y genotypes

34 Part of a tree branch is broken off and planted in the soil. A new tree grows from the branch.

Which row is correct?

	the cells in the new tree are formed by		the cells in the original tree and in the new tree will be genetically	
	meiosis	mitosis	different	identical
A	✓	✗	✓	✗
B	✗	✓	✗	✓
C	✗	✓	✓	✗
D	✓	✗	✗	✓

key

✓ = correct

✗ = not correct

35 A species of insect usually has pale-coloured wings. This helps to camouflage them on pale-coloured tree trunks. A few of the insects in this species have darker coloured wings.

After a number of years the tree trunks become darker in colour due to environmental changes. The insects with dark-coloured wings become more common than insects with pale-coloured wings in this species.

Which process causes this change in the proportion of insects with dark-coloured wings?

A biotechnology

B conservation

C natural selection

D selective breeding

36 The diagram shows a food chain.

grass → grasshopper → frog → snake → hawk

What is the tertiary consumer in this food chain?

A frog

B grasshopper

C hawk

D snake

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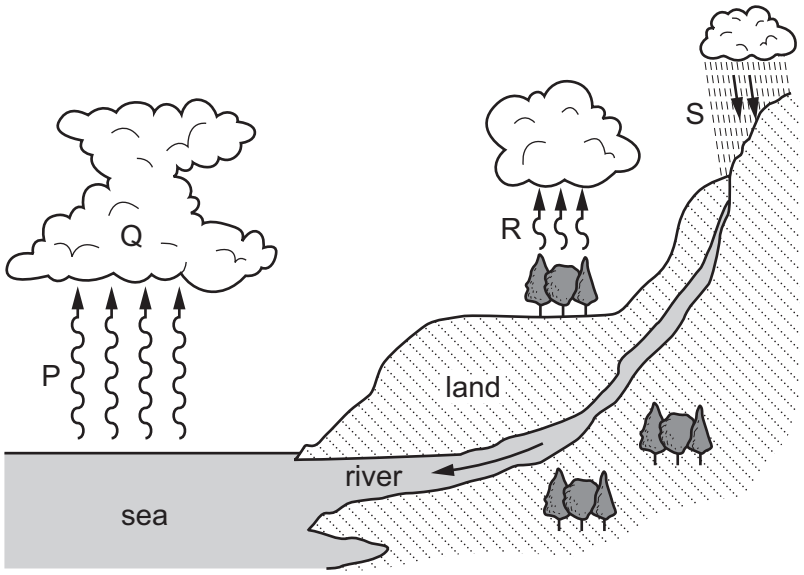
37 The diagram shows the water cycle.



The table shows the processes involved in the water cycle.

Which row is correct?

	condensation	evaporation	precipitation	transpiration
A	P	Q	R	S
B	R	S	Q	P
C	S	R	P	Q
D	Q	P	S	R

38 Which process releases carbon dioxide into the atmosphere?

A decomposition

B fossilisation

C photosynthesis

D transpiration

39 What is the useful product of anaerobic respiration in the manufacture of bread?

A carbon dioxide

B ethanol

C lactic acid

D oxygen

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[Turn over

40 What are reasons why species become endangered?

A habitat destruction, hunting and introduced species

B habitat protection, introduced species and monitoring

C habitat destruction, hunting and captive breeding programmes

D hunting, pollution and seed banks

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