UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

BIOLOGY **0610/12**

Paper 1 Multiple Choice **May/June 2012**

45 minutes

Additional Materials: Multiple Choice Answer Sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)

* 2 4 0 2 5 4 8 2 9 4 *

READ THESE INSTRUCTIONS FIRST

Write in soft pencil.
Do not use staples, paper clips, highlighters, glue or correction fluid.
Write your name, Centre number and candidate number on the Answer Sheet in the spaces provided unless this has been done for you.

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 separate Answer Sheet.

Read the instructions on the Answer Sheet very carefully.

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.
Any rough working should be done in this booklet.

This document consists of **17** printed pages and **3** blank pages.

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1 Which process in plant cells uses chlorophyll?

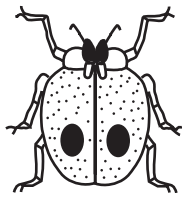
A growth

B nutrition

C movement

D respiration

2 The diagram shows the external features of an animal.



To which group does the animal belong?

A annelids

B arthropods

C molluscs

D nematodes

3 Which vertebrate groups have scaly skin?

A amphibians and fish

B amphibians and mammals

C fish and mammals

D fish and reptiles

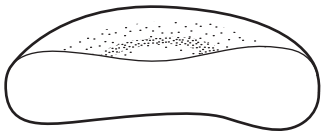
4 Some cells have cell walls.

Which statements are correct for cell walls?

	in animals	in plants
A	absent	present inside cell membrane
B	absent	present outside cell membrane
C	present inside cell membrane	absent
D	present outside cell membrane	absent

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5 The diagram shows a specialised cell cut in half.



What does this diagram indicate about the structure of this cell?

A The cell does not have a membrane.

B The cell is concave on each side.

C The cell is long and thin.

D The cell is red and carries oxygen.

6 In a mesophyll cell, where are chloroplasts found?

A between the cell wall and the cell membrane

B in the cytoplasm

C in the nucleus

D in the vacuole

7 In a plant, a group of xylem vessels form

A a cell.

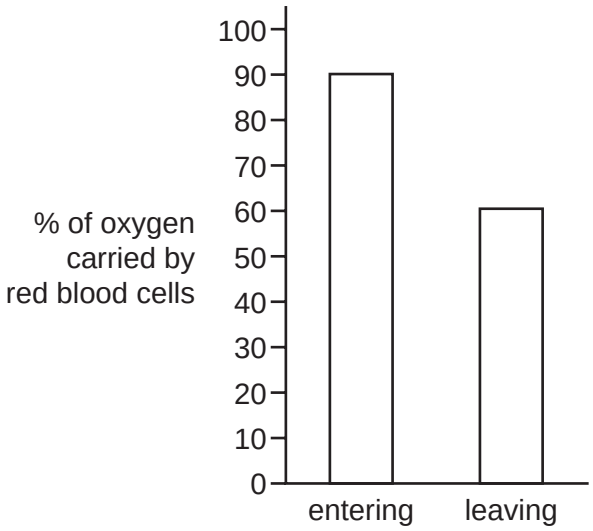
B a tissue.

C an organ.

D an organ system.

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8 The bar chart compares the percentage of oxygen carried by red blood cells entering and leaving a relaxed muscle. On the bar chart, 100% is the amount of oxygen carried by red blood cells as they leave the lungs.

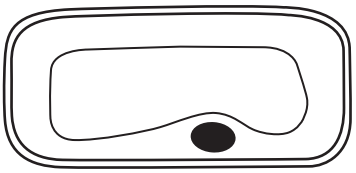


How much oxygen would red blood cells be likely to carry when leaving the same muscle after contraction?

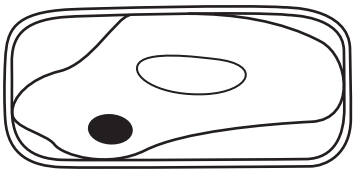
A 40 % **B** 60 % **C** 90 % **D** 100 %

9 Which diagram shows the appearance of a plant cell after it is placed in distilled water?

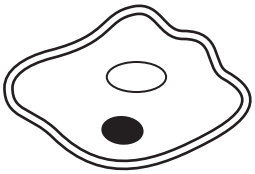
A



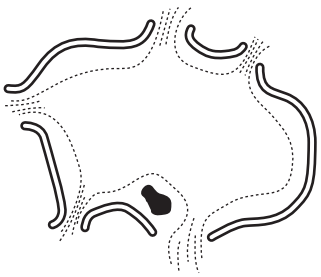
B



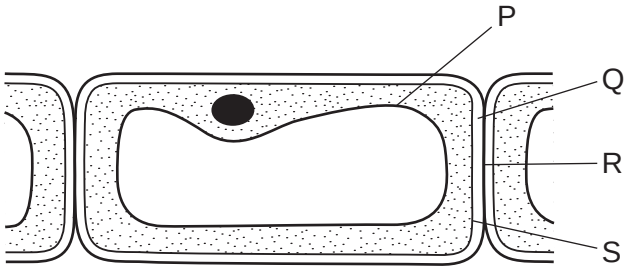
C



D



10 The diagram shows cells from the epidermis of a leaf.



Which parts are partially permeable?

A P and Q **B** Q and R **C** R and S **D** P and S

11 Equal quantities of a protein-digesting enzyme were added to 5 cm^3 of protein solutions of different pH. Each tube was kept at 37 °C.
The amount of amino acid in each tube was measured after 3 minutes. The results are shown in the table.

pH	amount of amino acid / arbitrary units
1	10
2	9
3	7
4	2
5	1
6	1
7	1
8	0

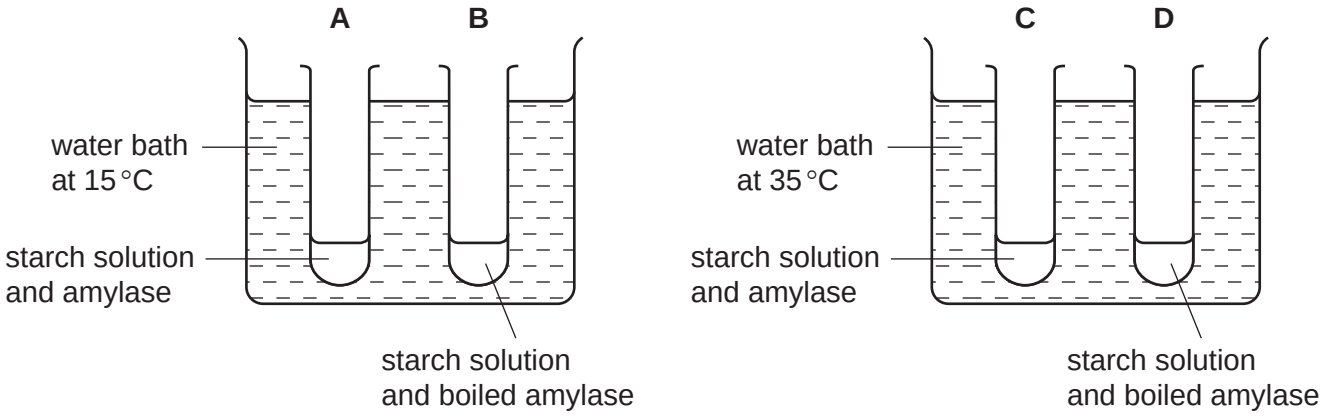
At which pH was the enzyme most active?

A 1 **B** 7 **C** 8 **D** 10

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

In which tube is the starch digested most quickly?



13 The activity of lipase is measured in four parts of the gut.

Which part has the most lipase activity?

A colon

B duodenum

C oesophagus

D stomach

14 The table shows the colour of a biuret solution before and after a food test was carried out.

colour of solution before food test	colour of solution after food test
blue	lilac / purple

Which nutrient was present?

A fat

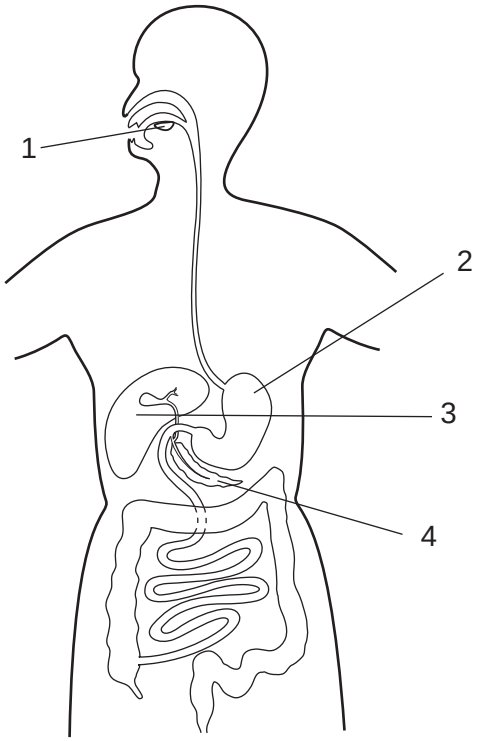
B protein

C reducing sugar

D starch

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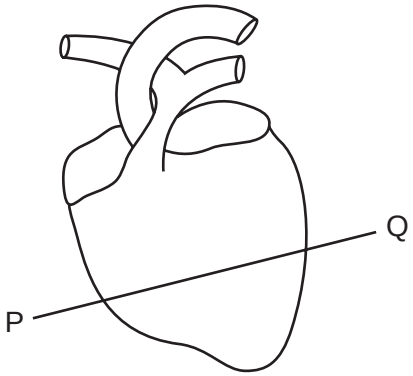
15 The diagram shows some organs of the digestive system.



Where is amylase made?

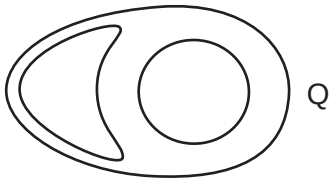
A 1 and 4 **B** 2 and 3 **C** 2 and 4 **D** 3 and 4

16 The diagram shows the heart as seen from the front.

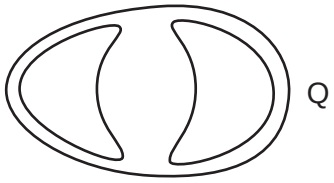


Which section shows the heart cut through line P-Q?

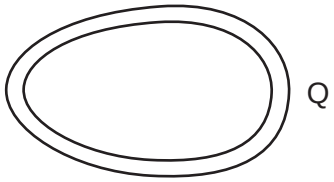
A



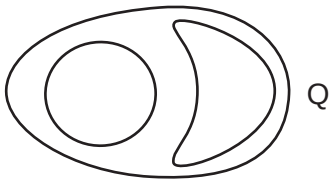
B



C

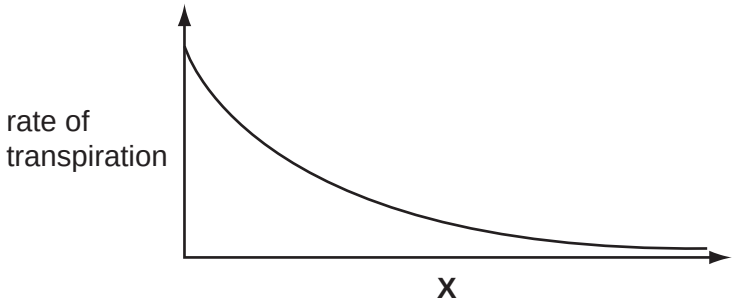


D



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17 The graph shows how the rate of transpiration is affected by **X**.



What is **X**?

A humidity

B light intensity

C soil moisture

D temperature

18 What is the characteristic feature of a double circulation?

A In each circuit, blood passes from the gut to the liver before going back to the heart.

B In each circuit, blood passes from the heart to the lungs and then back to the heart before going to other parts of the body.

C In each circuit, blood passes through atria and ventricles before going to other parts of the body.

D In each circuit, blood passes through the arteries and the capillaries before returning to the heart in veins.

19 Which process, inside cells, releases energy useful to the human body?

A digestion

B excretion

C mitosis

D respiration

20 Why is yeast used in bread-making?

A Aerobic respiration produces alcohol.

B Aerobic respiration produces carbon dioxide.

C Anaerobic respiration produces alcohol.

D Anaerobic respiration produces carbon dioxide.

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21 How are aerobic and anaerobic respiration similar?

A Both involve breaking down glucose.

B Both need a low concentration of oxygen.

C In muscles, both produce carbon dioxide.

D In yeast, both produce alcohol.

22 During a long-distance race, the body temperature of an athlete begins to rise.

Which changes occur to help return the body temperature to normal?

	sweating	blood vessels in the skin
A	decreases	constrict
B	decreases	dilate
C	increases	constrict
D	increases	dilate

23 In which order does urea pass through structures in the body?

A kidney → ureter → liver → urethra

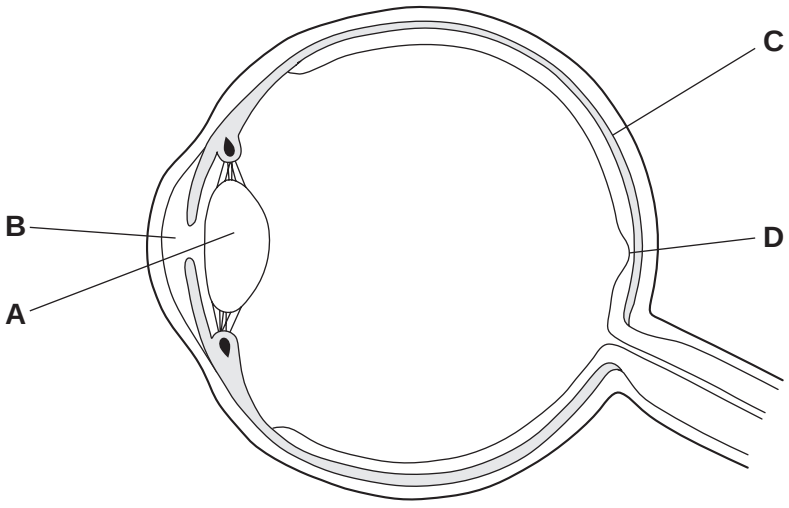
B kidney → urethra → liver → ureter

C liver → kidney → ureter → urethra

D liver → urethra → kidney → ureter

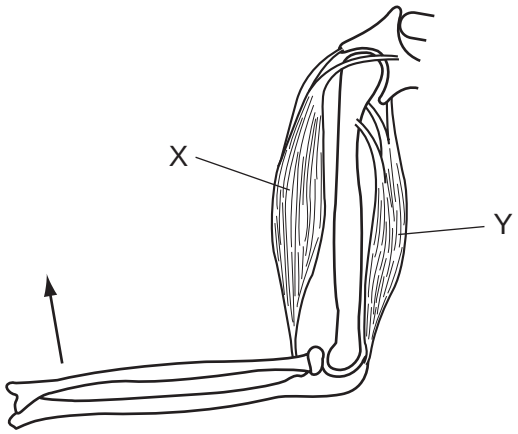
24 The diagram shows a section through the human eye.

Which labelled part prevents the internal reflection of light in the eye?



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25 The diagram shows the bones and muscles of the upper arm.



What must happen for the bones in the lower arm to move in the direction of the arrow?

A Muscle X contracts and muscle Y contracts.

B Muscle X contracts and muscle Y relaxes.

C Muscle X relaxes and muscle Y contracts.

D Muscle X relaxes and muscle Y relaxes.

26 Which combination of structural features is found in a wind-pollinated flower?

A anthers inside flower, smooth pollen, no scent

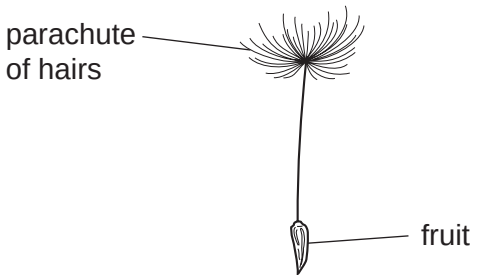
B coloured petals, sticky pollen, strong scent

C large flowers, nectaries present, light pollen

D no petals, anthers outside flower, no nectaries

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27 The diagram shows a dandelion fruit attached to a parachute of hairs.



The following results were obtained during an experiment to investigate the time taken for the fruits of four different dandelions to fall to the ground.

dandelion	diameter of parachute / cm	time taken to fall / s
1	0.4	1.5
2	0.7	2.5
3	1.0	4.0
4	1.2	4.5

Which conclusion can be drawn from these results?

A As parachute diameter decreases, time taken to fall decreases.

B Fruit 4 fell fastest and fruit 1 fell slowest.

C Dandelion fruits are well adapted for animal dispersal.

D Fruit size affects the time taken for the fruit to fall.

28 How is development of an organism defined?

A increase in complexity

B increase in the number of cells in the organism

C increase in the size of cells

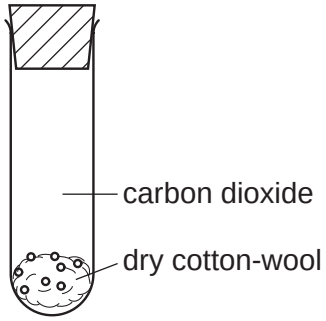
D permanent increase in the organism's dry mass

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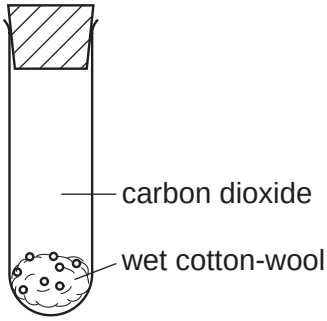
29 An experiment is set up at 20°C to investigate some conditions necessary for the germination of seeds.

In which apparatus will germination occur?

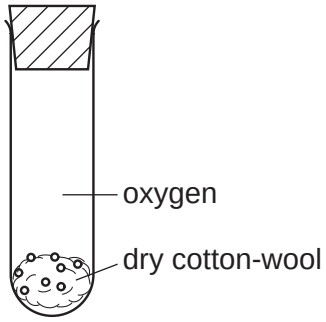
A



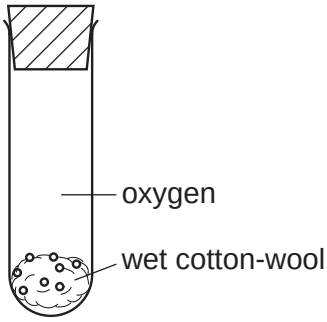
B



C



D



30 In pea plants, the allele for tall stems is dominant to the allele for short stems.

A heterozygous tall plant is crossed with a short plant, and 100 offspring are produced.

How many of the offspring are likely to be tall?

A 25 **B** 50 **C** 75 **D** 100

31 The nucleus in a body cell of a fly contains 12 chromosomes.

How many chromosomes are there in the nucleus of a sperm from this fly?

A 3 **B** 6 **C** 12 **D** 24

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32 In a species of plant, the allele for red flowers (R) is dominant over the allele for white flowers (r).

Two red–flowered plants were crossed.

parents plant with red flowers × plant with red flowers

↓

offspring 93 red-flowered and 28 white-flowered

What are the genotypes of the parents?

A RR and rr **B** RR and Rr **C** Rr and Rr **D** Rr and rr

33 The diagram shows a food chain.

grass → wildebeest → lion

What is the original source of energy used in this food chain?

A grass

B lion

C sunlight

D wildebeest

34 What may happen to the Sun's energy that reaches the Earth?

A converted to chemical energy by animals

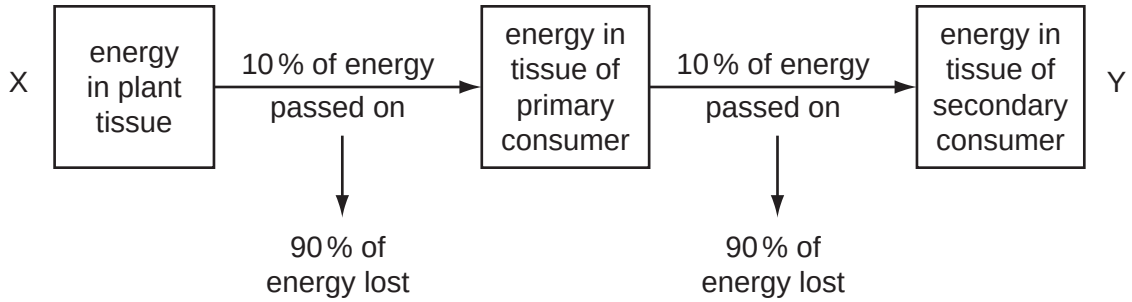
B recycled by bacteria

C stored in fossil fuels

D used by plants for absorbing water

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35 The diagram shows energy flow through a food chain from X to Y.



By which processes is energy lost between X and Y?

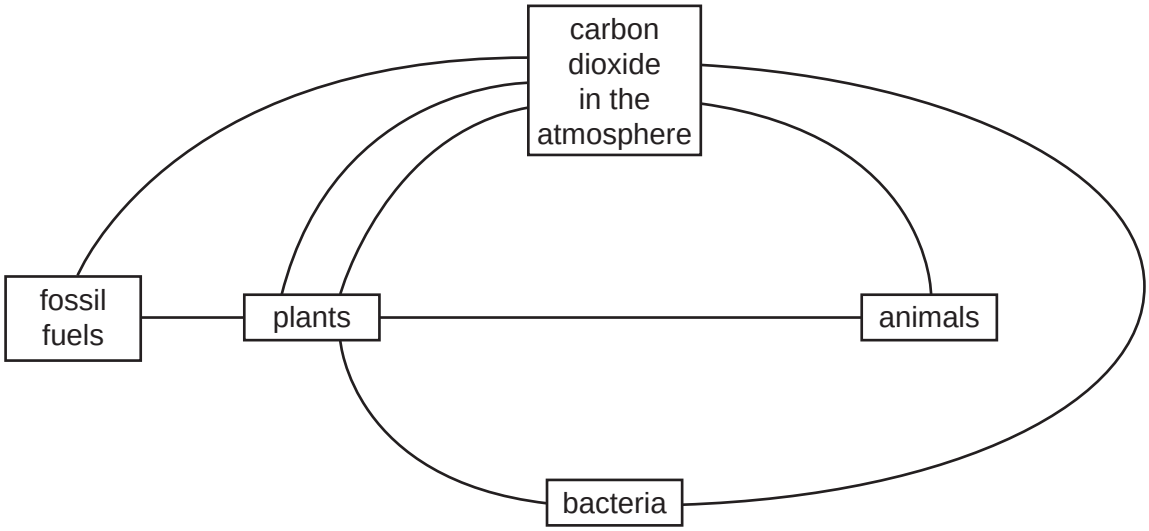
A excretion and respiration

B growth and excretion

C growth and photosynthesis

D photosynthesis and respiration

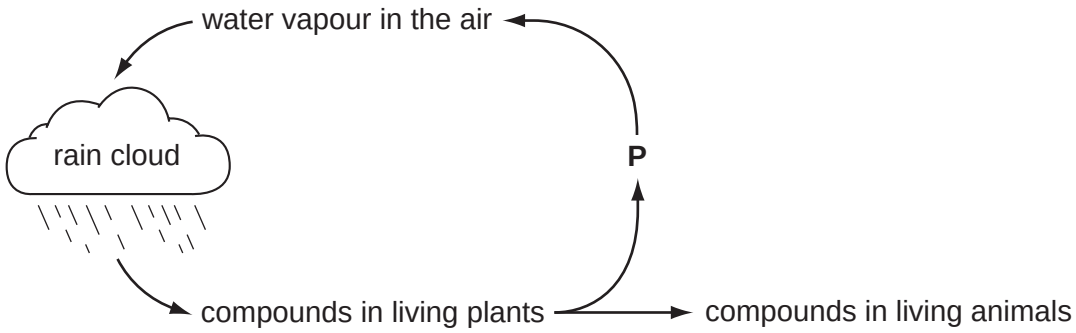
36 The diagram shows the movement of carbon atoms in part of the carbon cycle. The directions of movement are not shown.



How many of the groups of living organisms in the diagram return carbon dioxide to the atmosphere?

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

37 The diagram shows part of the water cycle.



Which process in living plants is responsible for returning water vapour to the air at **P**?

A combustion

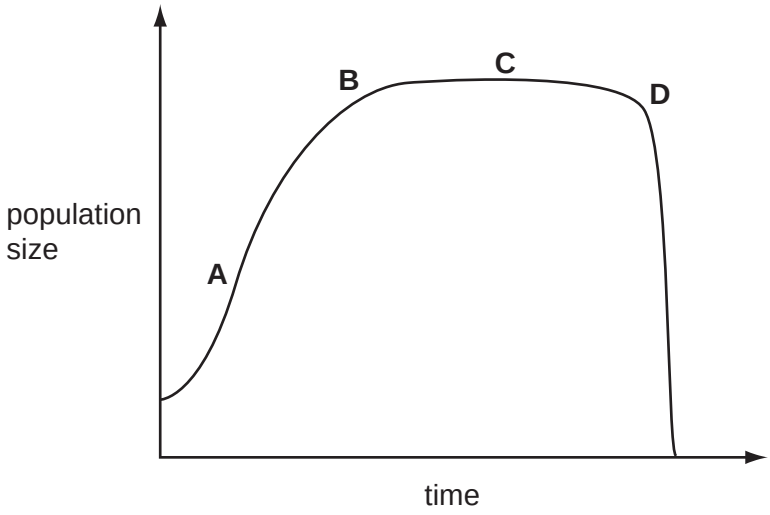
B condensation

C evaporation

D photosynthesis

38 The diagram shows how the size of a population may change with time.

At which point is the population growing the fastest?



39 Which agricultural activity can cause the most pollution?

A adding artificial fertilisers

B cutting down trees

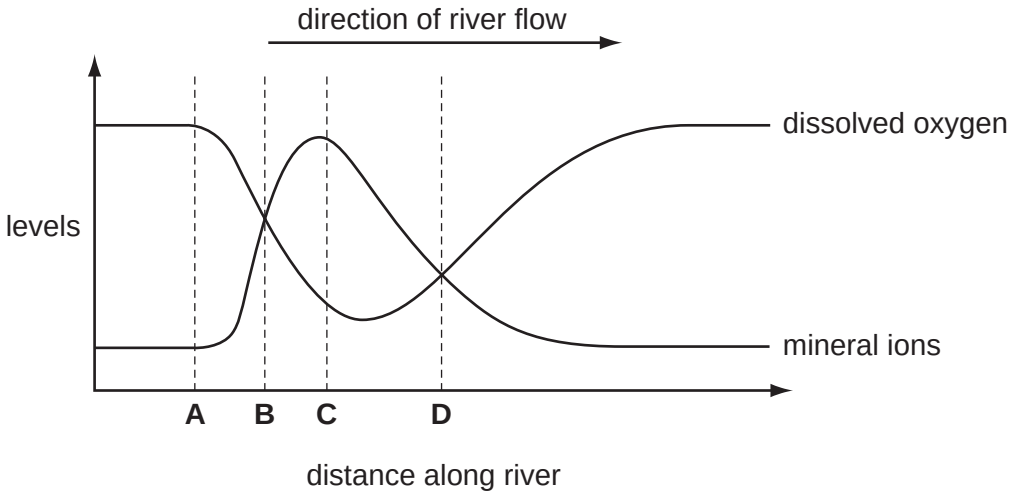
C digging plant material into the soil

D growing high-yielding crops

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40 The graph shows the levels of dissolved oxygen and mineral ions in a river.

At what point does raw sewage enter the river?



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