UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

BIOLOGY **0610/12**

Paper 1 Multiple Choice **May/June 2013**

45 minutes

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

8237681575

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.
DO **NOT** WRITE IN ANY BARCODES

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.

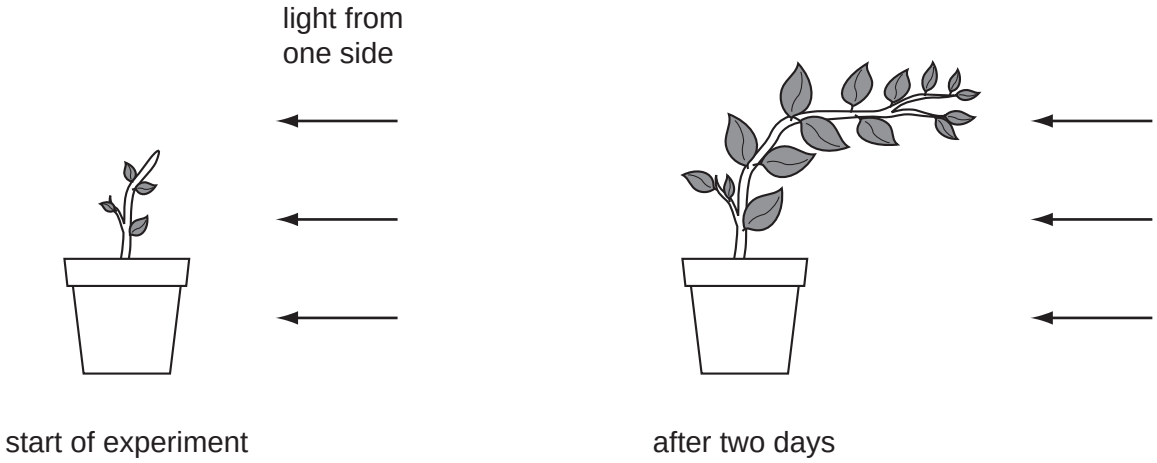
Read the instructions on the Answer Sheet very carefully.

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.
Electronic calculators may be used.

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

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1 The diagrams show a plant at the start of an experiment, and the same plant two days later.



Which characteristic of living organisms is **not** demonstrated by this experiment?

A excretion

B growth

C movement

D sensitivity

2 An animal can swim, has a backbone, suckles young and breathes air.

To which group does it belong?

A amphibians

B fish

C mammals

D reptiles

3 What is a feature of **both** insects **and** arachnids?

A antennae

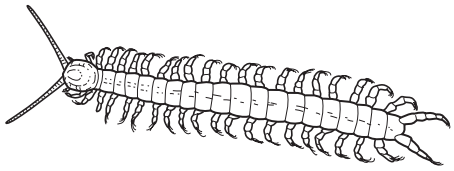
B compound eyes

C exoskeleton

D six legs

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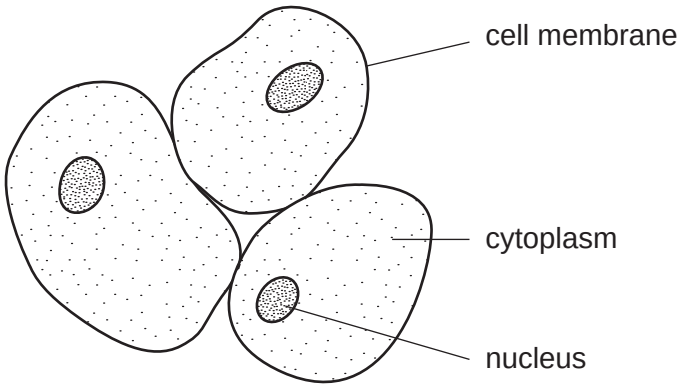
4 The diagram shows an arthropod.



Using the key, identify this arthropod.

1	body segments clearly visible	go to 2
	body segments not visible	go to 4
2	body with many segments	go to 3
	body with three distinct parts	go to 4
3	antennae longer than the legs	**A**
	antennae shorter than the legs	**B**
4	three pairs of legs	**C**
	more than three pairs of legs	**D**

5 The diagram shows some cells.



What are these cells?

A liver cells

B palisade cells

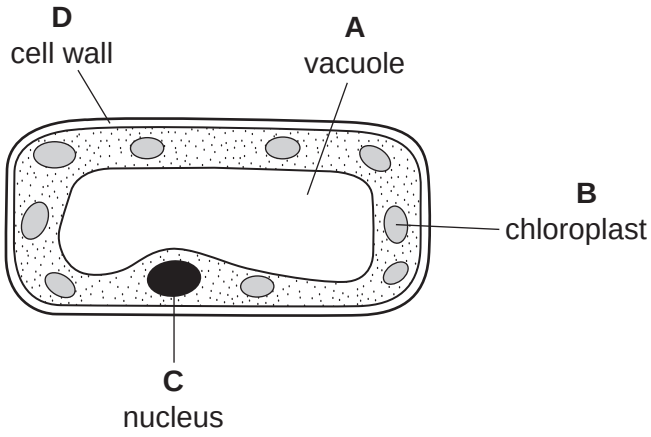
C red blood cells

D white blood cells

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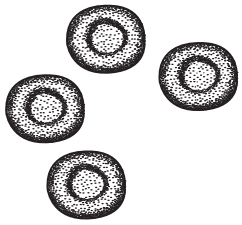
6 The diagram shows a plant cell.

In which labelled part of the cell is sugar made?

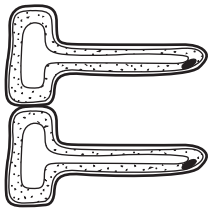


7 Which cells line the trachea?

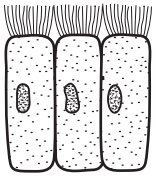
A



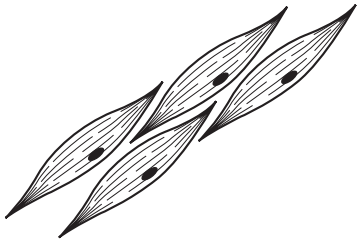
B



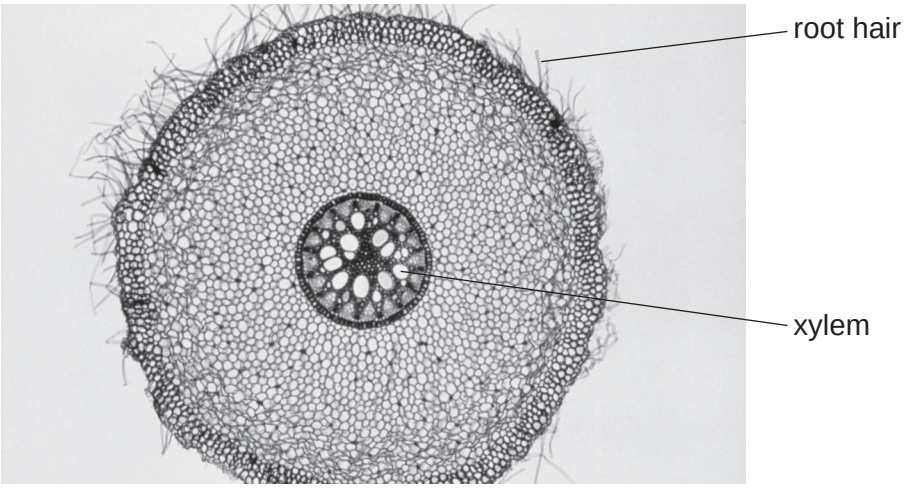
C



D



8 The photograph shows a cross-section of a root.



The root hair and the xylem are part of the same

A cell and organism.

B cell and tissue.

C organ and organism.

D tissue and organ.

9 The scent from a bunch of flowers spreads throughout a room.

How does the scent spread?

A by conduction

B by diffusion

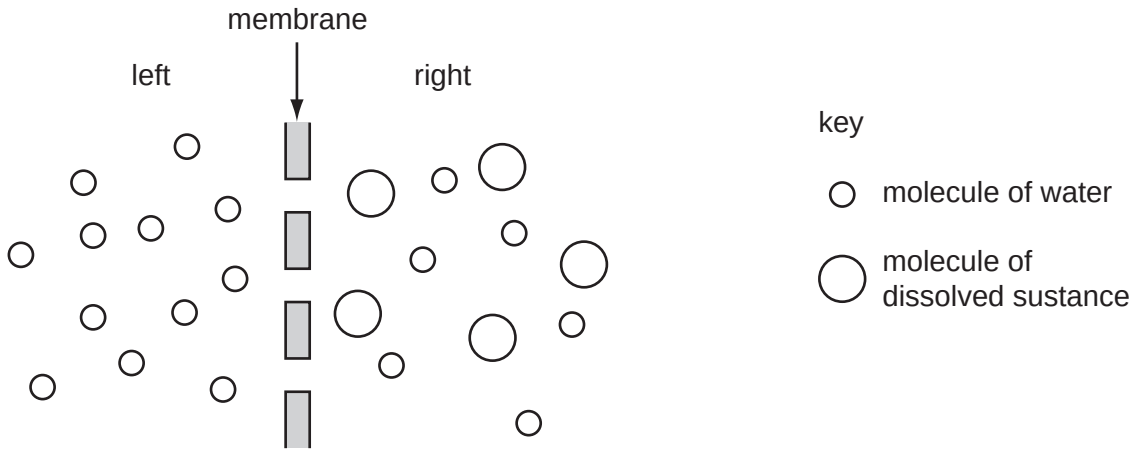
C by osmosis

D by transpiration

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[Turn over

10 The diagram represents two liquids, separated by a membrane through which osmosis can occur.



What movement of molecules will occur?

A Molecules of dissolved substance move from left to right.

B Molecules of dissolved substance move from right to left.

C Overall, water molecules move from left to right.

D Overall, water molecules move from right to left.

11 The temperature of an enzyme-controlled reaction is increased by 10 °C.

How does this affect the rate of reaction?

A It always increases the rate.

B It always decreases the rate.

C It may increase or decrease the rate.

D It has no effect on the rate.

12 In an experiment, the effect of temperature on the action of amylase is investigated.

Six different test-tubes are set up, each containing a mixture of amylase and starch solution.

Which condition should **not** be kept the same in each of the six test-tubes?

A concentration of amylase

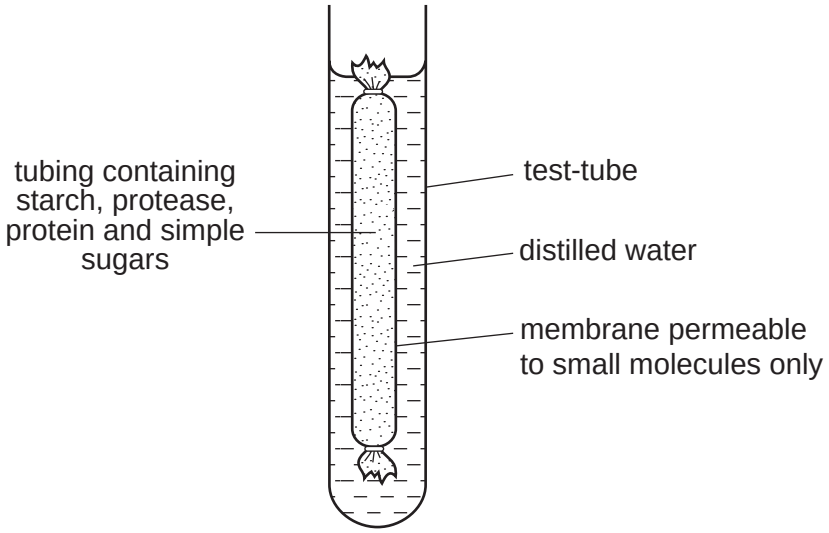
B pH

C temperature

D volume of starch solution

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13 The diagram shows an experiment kept at room temperature.



What is present in the water surrounding the membrane after 45 minutes?

A amino acids and simple sugars

B protein and amino acids

C protein and simple sugars

D starch and simple sugars

14 What is the result of a diet lacking iron?

A bleeding gums

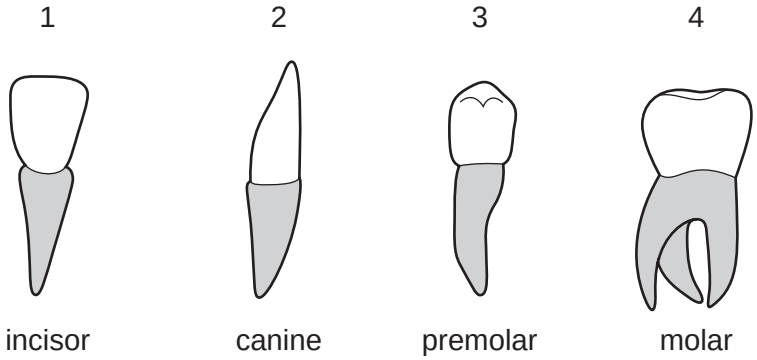
B poor wound healing

C reduced number of red blood cells

D weak bones and teeth

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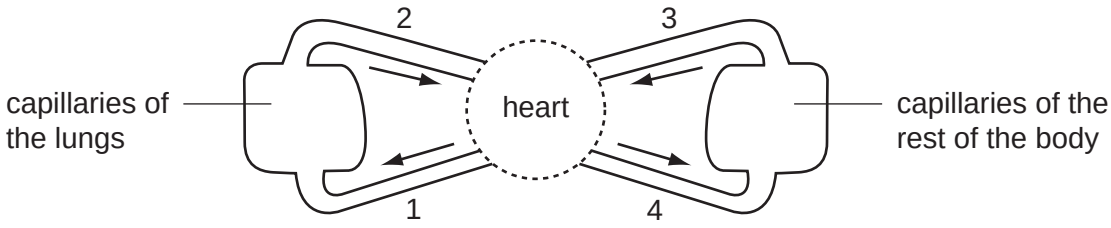
15 The diagram shows the four types of human tooth.



Which teeth are used for cutting rather than grinding food?

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

16 The diagram shows a double circulatory system.



Which vessels carry oxygenated blood?

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

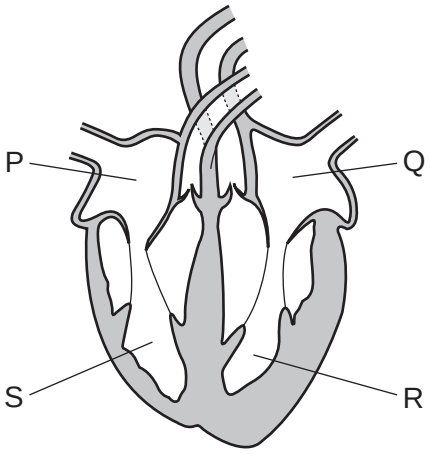
17 Which words correctly complete the following sentence?

'Transpiration is the ……1…… of water at the surface of the ……2…… cells followed by the ……3…… of water vapour from the plant ……4…… .'

	1	2	3	4
A	active uptake	xylem	gain	stem
B	diffusion	guard	gain	root
C	evaporation	mesophyll	loss	leaves
D	osmosis	cuticle	loss	flower

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18 The diagram shows the human heart.



In which order does blood pass through the chambers during a complete circuit of the body after it returns from the lungs?

A Q → R → S → P

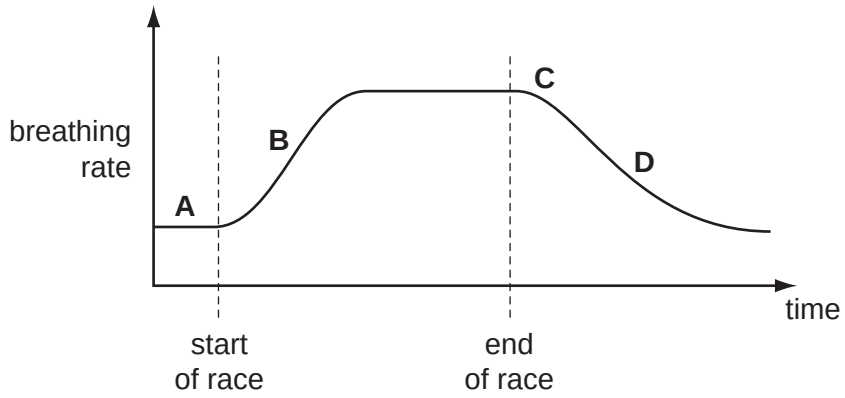
B Q → R → P → S

C P → S → Q → R

D P → S → R → Q

19 An athlete takes part in a race. The graph shows her breathing rate before, during and after the race.

At which point does her body contain the greatest amount of lactic acid?



20 When does respiration take place in animals and plants?

	animals	plants
A	all the time	all the time
B	all the time	night time only
C	day time only	day time only
D	day time only	night time only

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21 What are the effects of tobacco smoke on the gas exchange system?

	mucus in the airways	chance of lung infection
A	decreased	decreased
B	decreased	increased
C	increased	decreased
D	increased	increased

22 What are the functions of the diaphragm and the cilia in the human gas exchange system?

	diaphragm	cilia
A	contracts to cause breathing in	carry mucus to the throat
B	contracts to cause breathing out	trap bacteria from the air
C	relaxes to cause breathing in	filter dust from the air
D	relaxes to cause breathing out	produce mucus

23 Which food type, when eaten in excess, will cause a rise in the urea content of urine?

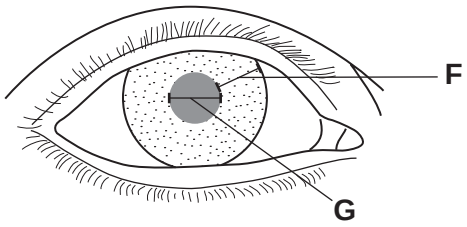
A carbohydrate

B fat

C mineral salts

D protein

24 The diagram shows the eye of a person in a brightly-lit room.



What happens to distance **F** and distance **G** when this person moves into a dimly-lit room?

	distance **F**	distance **G**
A	becomes larger	becomes smaller
B	becomes smaller	stays the same
C	becomes smaller	becomes larger
D	stays the same	becomes smaller

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25 A boy accidentally touches a very hot object and immediately takes his hand away.

In this reflex action, what is the effector?

A a heat receptor in his hand

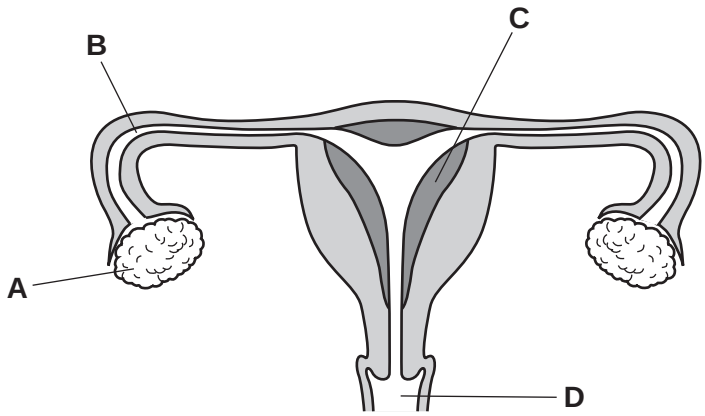
B a motor neurone

C a muscle in his arm

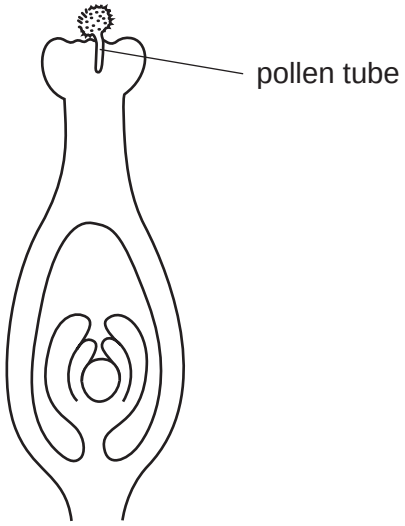
D the spinal cord

26 The diagram shows the female reproductive system.

Where does implantation normally occur?



27 The diagram shows a vertical section through the carpel of a flower that has been pollinated.



What is the correct order of structures through which the pollen tube must grow in order to bring about fertilisation?

	first →			last
A	micropyle	stigma	style	ovary wall
B	ovary wall	micropyle	stigma	style
C	stigma	style	ovary wall	micropyle
D	style	ovary wall	micropyle	stigma

28 Which environmental condition is **not** needed for the germination of seeds?

A carbon dioxide

B oxygen

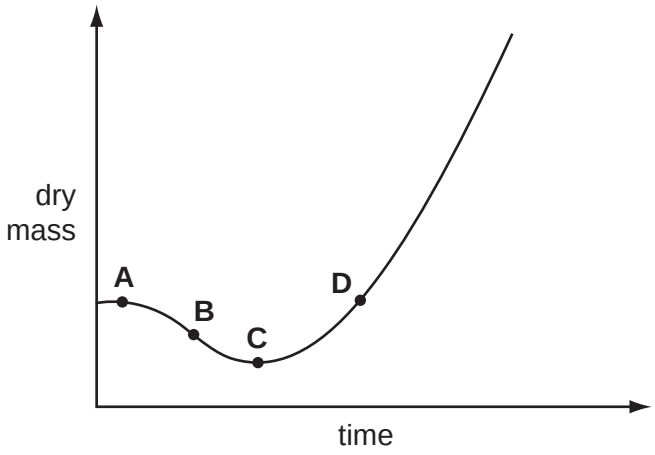
C warmth

D water

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29 The graph shows how dry mass of a plant changes with time.

Where on the graph is growth occurring?



30 When white-flowered pea plants are crossed with red-flowered pea plants, the offspring (F_1) all have red flowers.

If these F_1 plants pollinate themselves, the next generation (F_2) contains both red and white-flowered plants.

Which statement explains this?

A The allele for red flowers is dominant and the F_1 plants are heterozygous.

B The allele for red flowers is dominant and the F_1 plants are homozygous.

C The allele for red flowers is recessive and the F_1 plants are heterozygous.

D The allele for red flowers is recessive and the F_1 plants are homozygous.

31 A gene for insulin is taken from a human cell and placed in a bacterium.

The bacterium can then make human insulin.

What is this process called?

A artificial selection

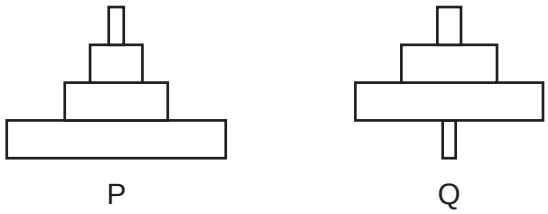
B genetic engineering

C heterozygous inheritance

D natural selection

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32 The diagram shows two pyramids based on food chains in which the producer is a large tree.



What do the two pyramids represent?

	P	Q
A	biomass	biomass
B	biomass	numbers
C	numbers	biomass
D	numbers	numbers

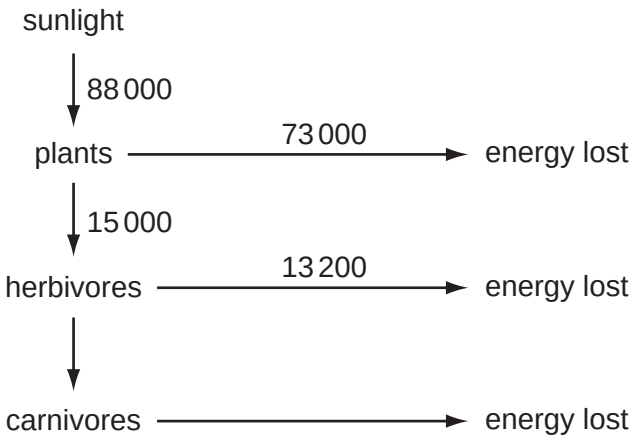
33 The diagram shows a food chain.

rice plant → caterpillar → song bird → hawk

How many decomposers are shown in this food chain?

A 0 **B** 1 **C** 3 **D** 4

34 The numbers in the diagram below show the amount of energy, in kJ, transferred through a part of an ecosystem.



How much energy, in kJ, is transferred from herbivores to carnivores?

A 15 000 + 13 200

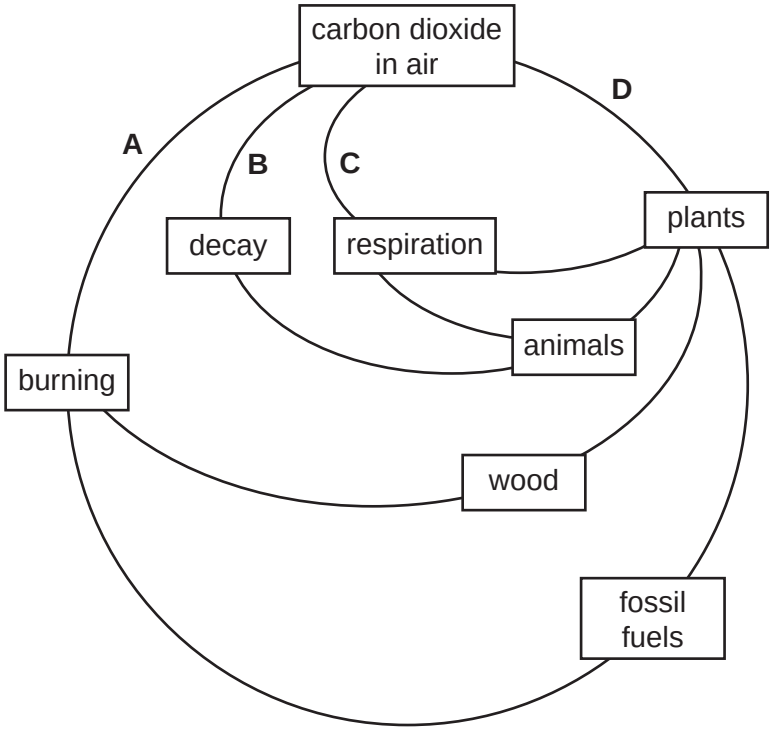
B 15 000 – 13 200

C 88 000 + 15 000

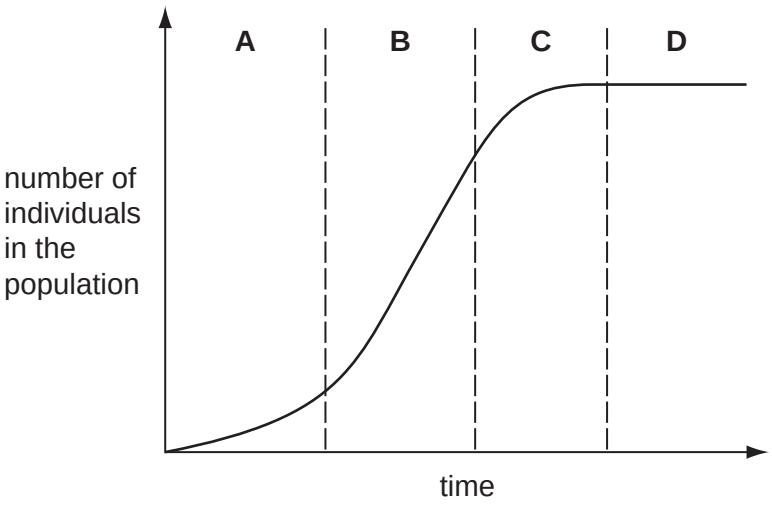
D 88 000 – 15 000

35 The diagram shows part of the carbon cycle without the arrows.

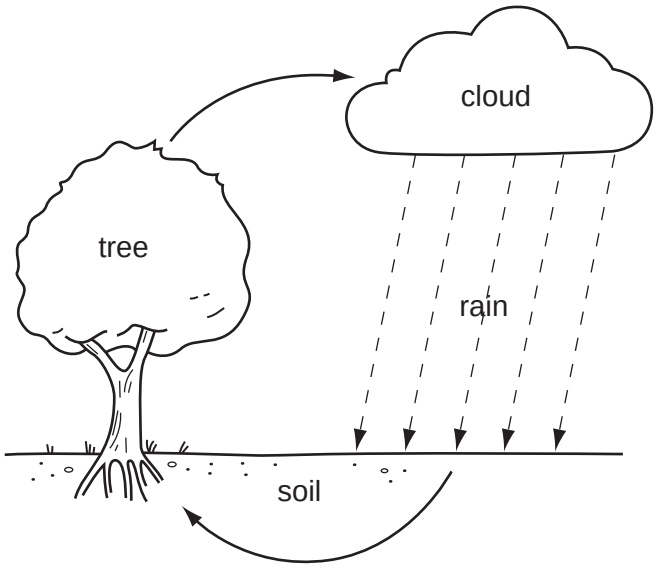
Which labelled line should have an arrow head on its lower end?



36 Which letter represents the lag phase in the population graph shown?



37 The diagram shows part of the water cycle.



How is water lost from the tree?

A condensation

B respiration

C translocation

D transpiration

38 The diagram shows a population pyramid for a city.



What feature of the population is shown in the diagram?

A A quarter of the population is aged above 70.

B The greater proportion of the population is aged below 40.

C There are more females over 80 than males over 80.

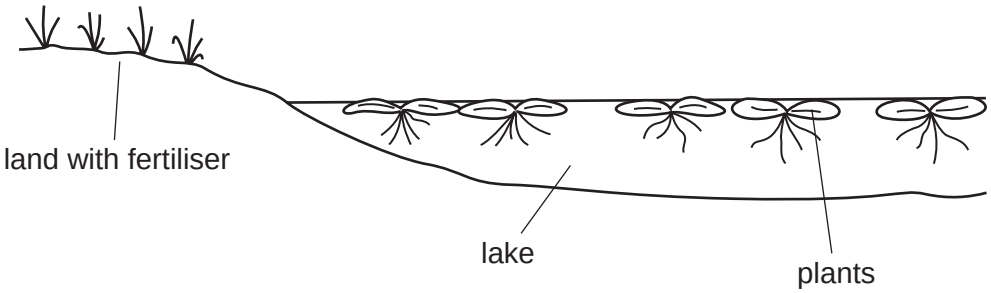
D There is a low birth rate.

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39 What are the possible effects of deforestation?

	loss of soil	flooding	decrease in atmospheric carbon dioxide
A	✓	✓	✗
B	✓	✗	✓
C	✗	✓	✗
D	✗	✗	✓

40 A farmer put some fertiliser on his field. Soon afterwards, there was a heavy storm and some of the fertiliser drained into a lake.



What is the effect of the fertiliser on the growth of the crop plants in the field and the plants in the lake?

	crop plants	lake plants
A	decrease growth	decrease growth
B	decrease growth	increase growth
C	increase growth	decrease growth
D	increase growth	increase growth

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