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Cambridge Assessment International Education

Cambridge IGCSE™

BIOLOGY **0610/12**

Paper 1 Multiple Choice (Core) **February/March 2022**

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.

This document has **20** pages. Any blank pages are indicated.

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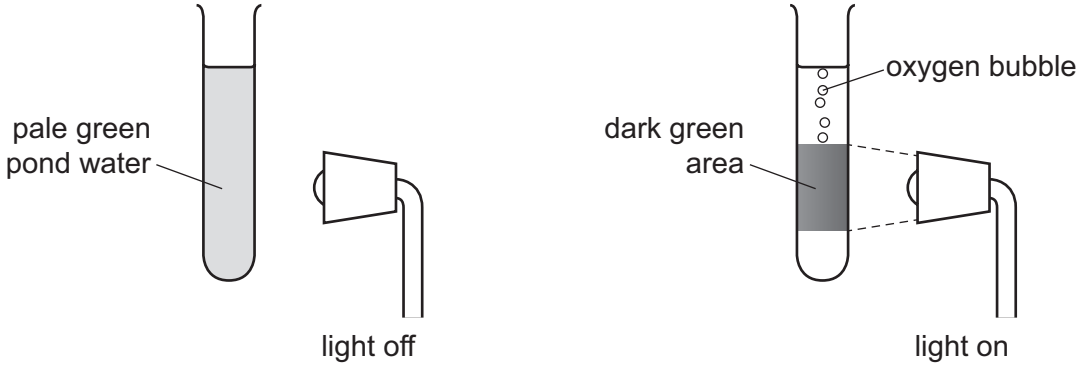
1 The diagrams show a test-tube containing pond water. The green colour is caused by microorganisms that have chloroplasts.



Which characteristics of living organisms are shown?

A excretion, growth and movement

B movement, nutrition and sensitivity

C nutrition, reproduction and respiration

D reproduction, sensitivity and growth

2 Which term means a group of organisms that can reproduce to produce fertile offspring?

A genus

B kingdom

C population

D species

3 Which group of characteristics describes a mammal?

	has body hair	produces milk	controls body temperature	produces live young
A	yes	yes	yes	yes
B	yes	no	yes	yes
C	no	yes	no	no
D	no	no	no	no

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4 Two types of cell, one animal and one plant, were examined using a light microscope.

Which row shows the correct combination of structures that would be observed in the cells?

	cell structure observed			
	animal cell		plant cell	
A	chloroplast	membrane	vacuole	cytoplasm
B	cytoplasm	nucleus	chloroplast	membrane
C	membrane	cell wall	cytoplasm	nucleus
D	nucleus	chloroplast	cell wall	membrane

5 The heart, arteries, veins and capillaries work together.

Which level of organisation is shown by these structures working together?

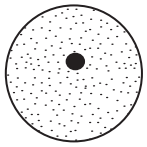
A a tissue

B an organ

C an organism

D an organ system

6 The diagram shows a cell. The diameter of the cell in the diagram is 18 mm.



The actual diameter of the cell is 0.05 mm.

What is the magnification of the diagram?

A ×0.003 **B** ×0.9 **C** ×360 **D** ×36 000

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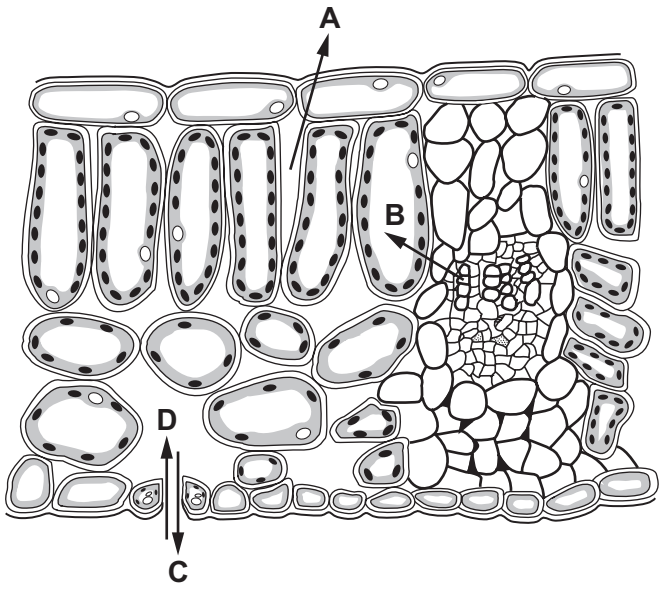
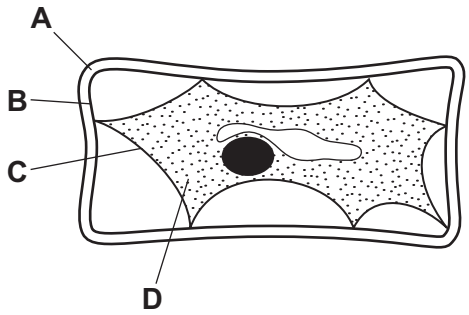
7 The diagram shows a cross-section through a leaf.

Which arrow shows the direction of diffusion of carbon dioxide on a sunny day?



8 The diagram shows a plant cell which has lost water to its surroundings by osmosis.

Which part is the partially permeable membrane?



9 Which row is correct for a positive food test for vitamin C?

	colour of the food test reagent at the start	heat required	final colour of the food test reagent
A	colourless	yes	purple
B	blue	no	colourless
C	colourless	no	blue
D	blue	yes	orange

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10 What controls the speed of chemical reactions in all living cells?

A enzymes

B hormones

C ions

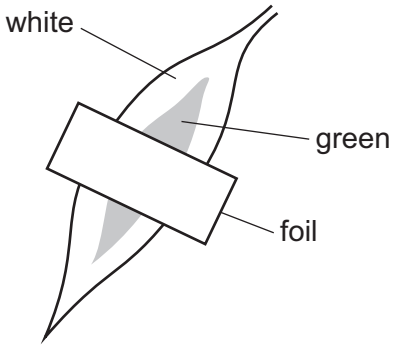
D vitamins

11 The table shows some properties of enzyme molecules.

Which row is a correct description of enzymes?

	chemical elements present	effect of changing temperature	enzyme activity
A	C, H and O only	can increase reaction rate	enzyme can be reused
B	C, H and O only	has no effect	enzyme is used up
C	C, H, O and N	can increase reaction rate	enzyme can be reused
D	C, H, O and N	can decrease reaction rate	enzyme is used up

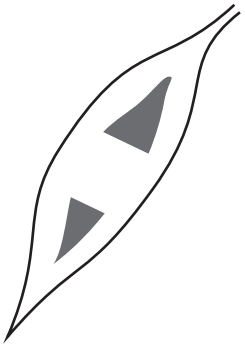
12 A piece of foil was placed over one green and white leaf on a plant.



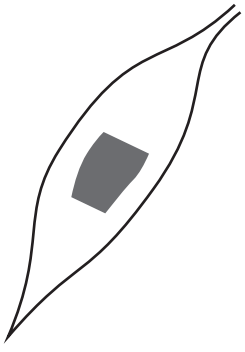
The plant was placed under a bright light for 24 hours and then tested for starch with iodine solution.

Which diagram shows the areas of the leaf that would stain blue-black with iodine solution?

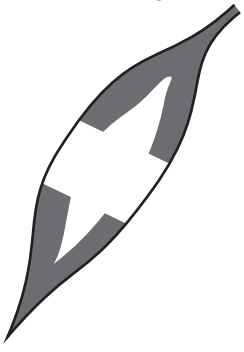
A



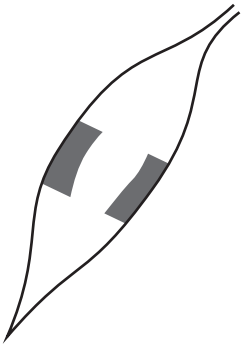
B



C



D



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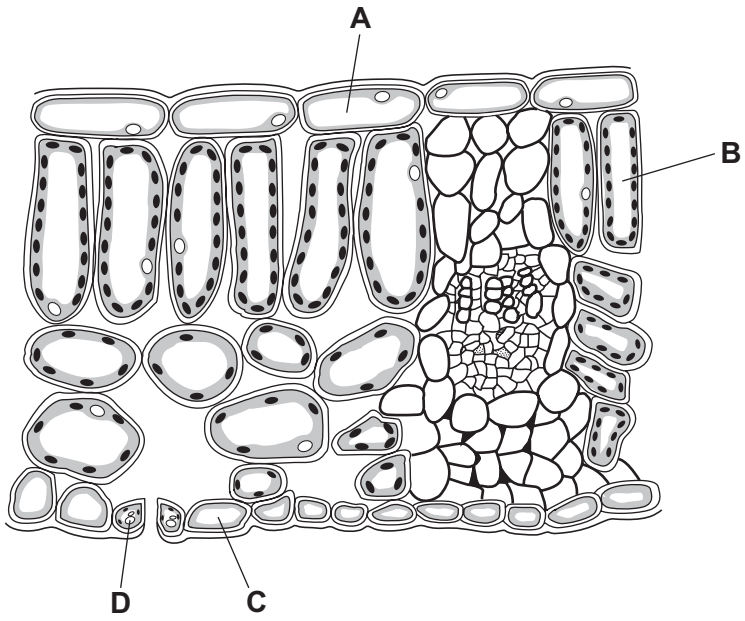
13 The diagram shows a cross-section of a leaf.

Which labelled cell is a guard cell?



14 Which condition can be caused by a lack of fibre in the diet?

A constipation

B obesity

C scurvy

D starvation

15 Which structure has a large surface area for the absorption of digested food?

A alveolus

B ileum

C liver

D pancreas

16 In which part of the alimentary canal do both chemical digestion and mechanical digestion take place?

A colon

B duodenum

C mouth

D oesophagus

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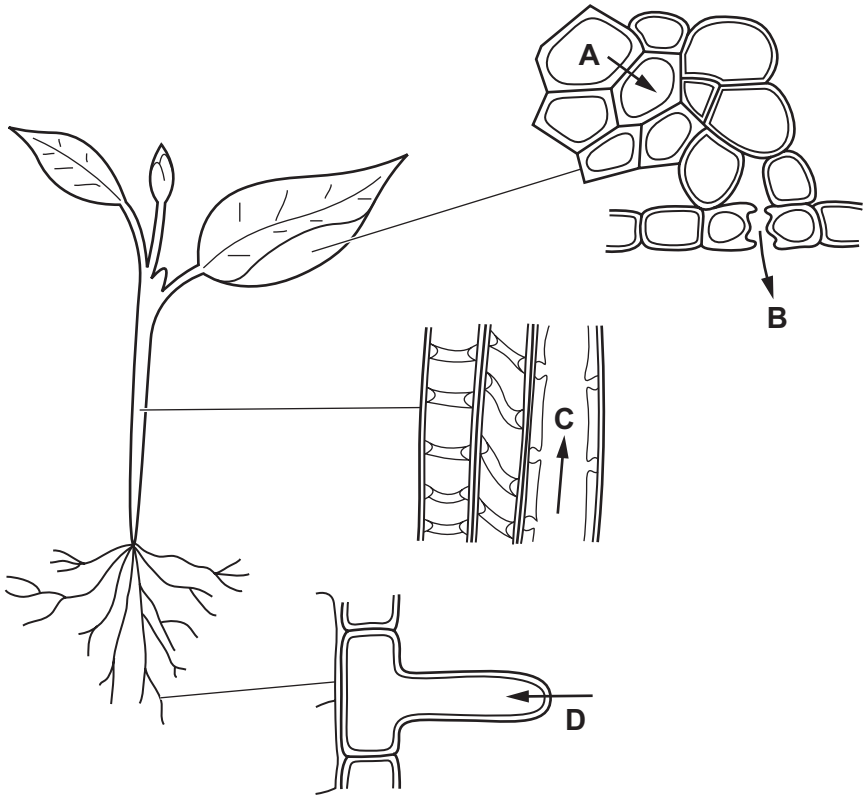
17 The diagrams show stages in the passage of water through a plant.

Which arrow shows water moving in the form of water vapour?



18 Which molecules are transported by the phloem?

A cellulose

B glycogen

C starch

D sugar

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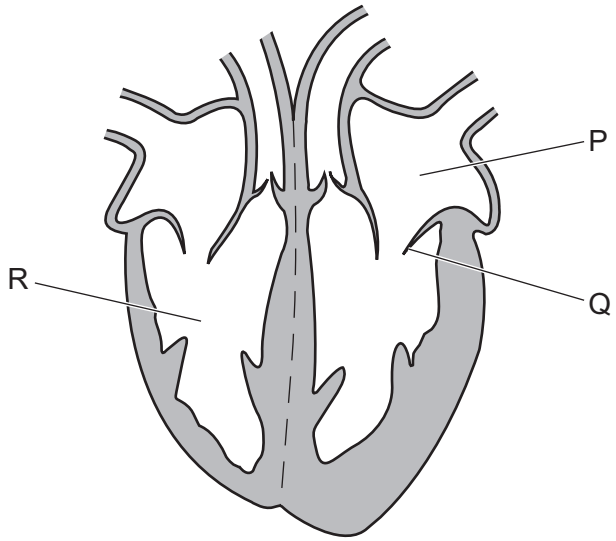
19 The diagram shows a section through the heart.



What is the function of the structure labelled Q?

A It controls the amount of blood leaving the heart.

B It increases the pressure in part R.

C It prevents backflow of blood into part P.

D It prevents blood flowing into the vena cava.

20 Which blood vessel returns blood from the lungs to the heart?

A aorta

B pulmonary artery

C pulmonary vein

D renal vein

21 What is an example of a transmissible disease?

A an STI

B chronic obstructive pulmonary disease (COPD)

C coronary heart disease

D dental decay

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22 Compared with inspired air, which description of expired air is correct?

A It has less oxygen and less carbon dioxide.

B It has less oxygen and more carbon dioxide.

C It has more oxygen and less carbon dioxide.

D It has more oxygen and more carbon dioxide.

23 Which row shows the features of the gas exchange surface in humans?

	surface area	thickness
A	large	thick
B	large	thin
C	small	thick
D	small	thin

24 Yeast is placed inside a container full of a glucose solution with no air.

Which word equation summarises the process that takes place inside the container?

A glucose → alcohol + carbon dioxide

B glucose → lactic acid

C glucose + oxygen → carbon dioxide + water

D glucose + oxygen → alcohol

25 Which process uses energy released in respiration?

A diffusion

B evaporation

C growth

D osmosis

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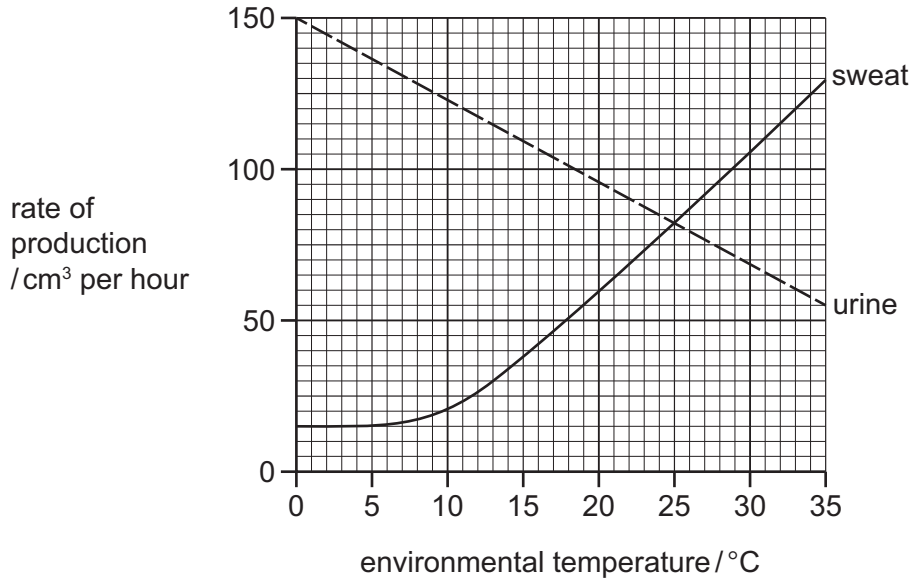
26 The graph shows the rates of sweat production and urine production at different environmental temperatures.



Which statement is correct?

A As the temperature increases, the rates of sweat and urine production increase.

B As the temperature increases, the rate of urine production increases.

C At 25 °C the rates of sweat and urine production are the same.

D Urine and sweat production are directly proportional to environmental temperature.

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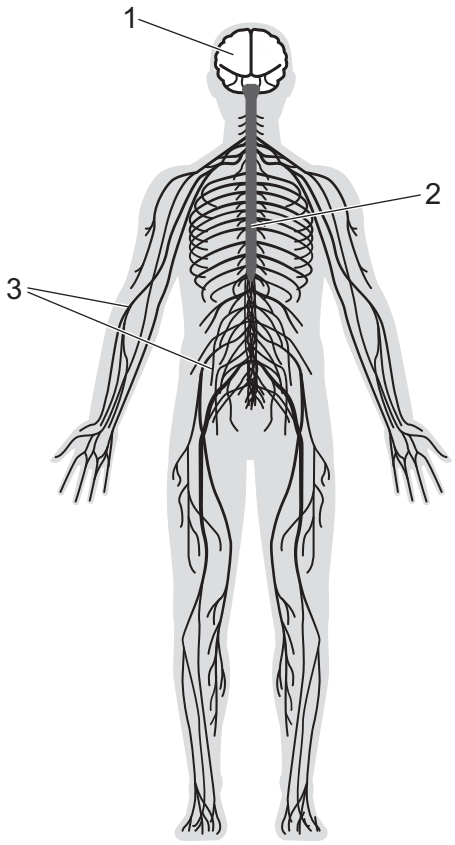
27 Which numbered parts form the central nervous system?



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

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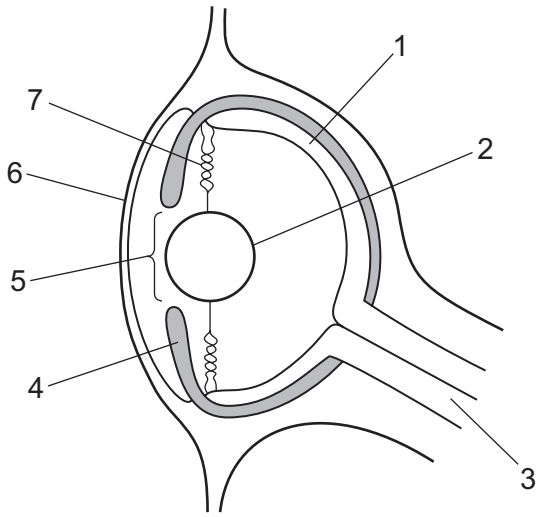
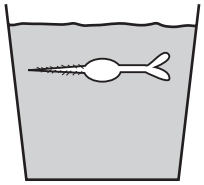
28 The diagram shows a section through the eye of an octopus. Octopuses have eyes that are similar in structure and function to human eyes.



Which row identifies the structures of the octopus eye?

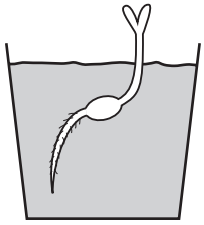
	pupil	cornea	lens	iris
A	4	6	7	3
B	5	1	2	3
C	4	1	7	5
D	5	6	2	4

29 The diagram shows a seedling that has been placed in a pot of soil.

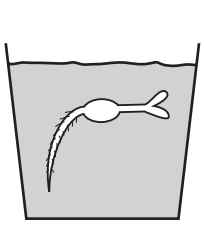


Which diagram shows what happens after five days?

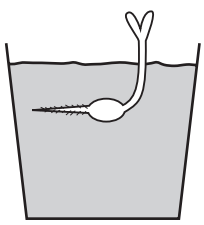
A



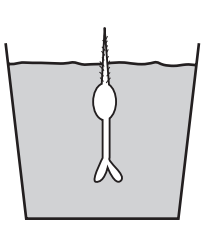
B



C



D



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30 What is the definition of a drug?

A any illegal substance taken into the body

B any substance taken into the body

C any substance taken into the body that modifies or affects chemical reactions in the body

D any substance taken into the body which is not a medicine

31 Which statement about reproduction is correct?

A All living species can reproduce asexually.

B Gametes are needed for asexual reproduction.

C Only organisms that are separated from other organisms of the same species can reproduce asexually.

D Some organisms reproduce asexually and sexually.

32 Fertilisation is the fusion of which parts of two cells?

A cell walls

B cytoplasm

C nuclei

D vacuoles

33 Which row shows the conditions required for germination?

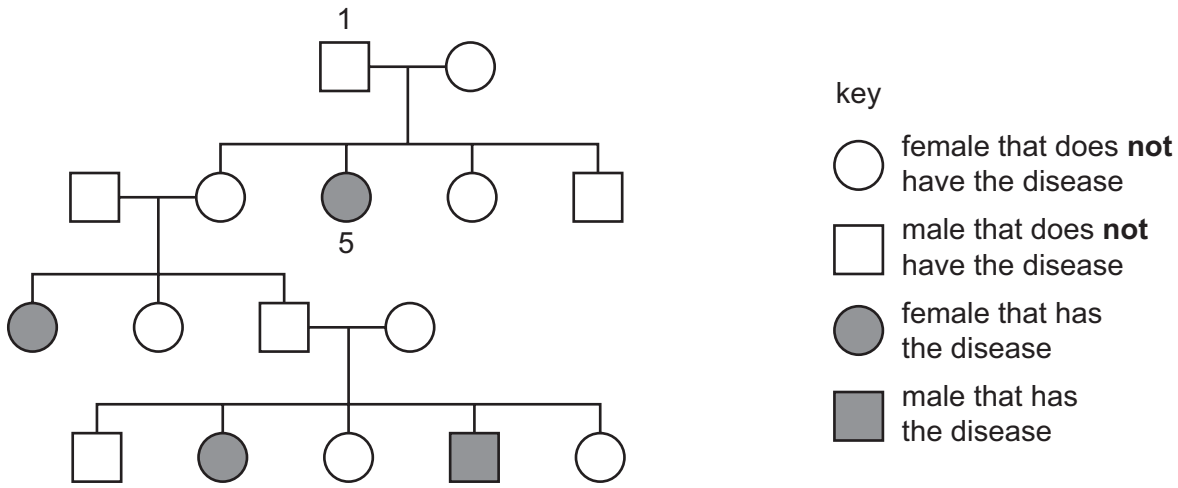
	carbon dioxide	oxygen	suitable temperature	water
A	✓	✗	✓	✓
B	✗	✓	✗	✓
C	✓	✗	✓	✗
D	✗	✓	✓	✓

key

✓ = yes

✗ = no

34 The pedigree diagram shows the inheritance of a genetic disease in a family.



Which row describes the correct genotypes for individual 1 and individual 5, for this genetic disease?

	individual 1	individual 5
A	heterozygous	homozygous dominant
B	heterozygous	homozygous recessive
C	homozygous dominant	heterozygous
D	homozygous recessive	heterozygous

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35 The photograph shows two wind-pollinated flowers.



Which row shows the features of these flowers?

	large petals	anthers positioned inside the flower	feathery stigmas
A	yes	yes	no
B	yes	no	no
C	no	no	yes
D	no	yes	yes

36 A scientist studied wild birds that lived by a lake. He observed that one bird species had a beak that was adapted to extract small insects from the water.

Which process would have occurred in the development of this specialised beak?

A genetic engineering

B natural selection

C selective breeding

D fossilisation

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37 What is the principal source of energy for the food chain shown?

grass → caterpillar → frog → snake → owl

A water

B mineral ions

C glucose

D sunlight

38 The diagram shows three different types of organism in a food chain.

producer → organism 2 → organism 3

Which statement is correct for this food chain?

A Organism 2 is a carnivore.

B Organism 2 is a secondary consumer.

C Organism 3 is a carnivore.

D Organism 3 is a tertiary consumer.

39 Which row shows the expected consequences of deforestation?

	carbon dioxide concentration in the atmosphere	soil levels	flooding
A	decreases	decrease	increases
B	decreases	increase	decreases
C	increases	decrease	increases
D	increases	increase	decreases

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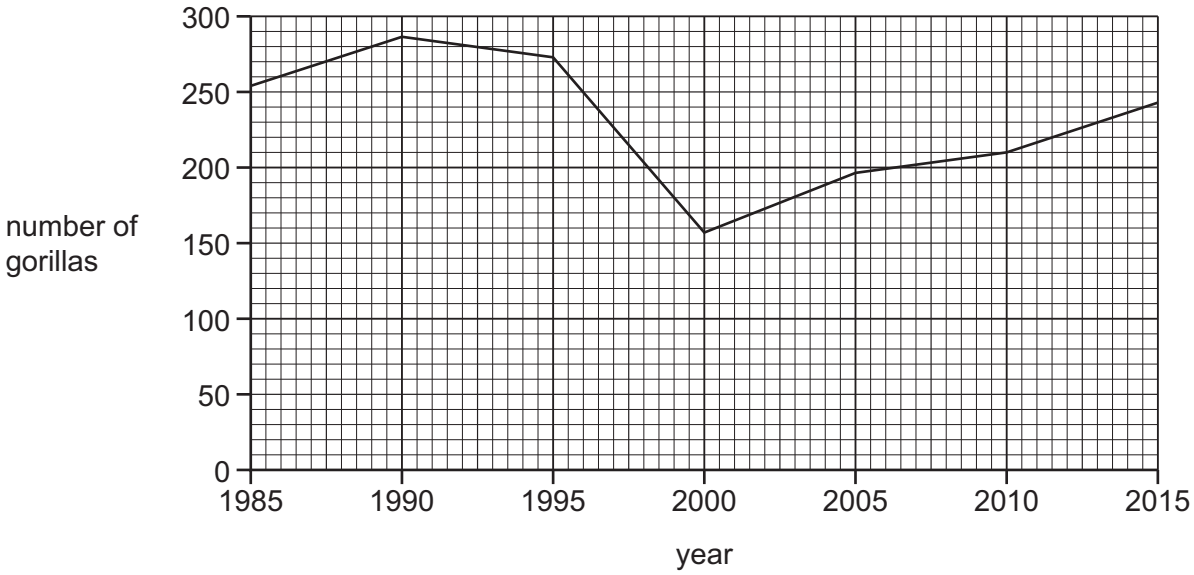
40 Gorillas are a type of large mammal. The graph shows the number of gorillas found in one region of a country.



What could have caused the trend between 2000 and 2015?

A deforestation

B habitat destruction

C hunting ban

D disease

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