Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

BIOLOGY **0610/13**

Paper 1 Multiple Choice **October/November 2014**

45 minutes

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

3567300897

READ THESE INSTRUCTIONS FIRST

Write in soft pencil.
Do not use staples, paper clips, 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.

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **15** printed pages and **1** blank page.

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1 Which characteristic do **all** living organisms show?

A breathing

B excretion

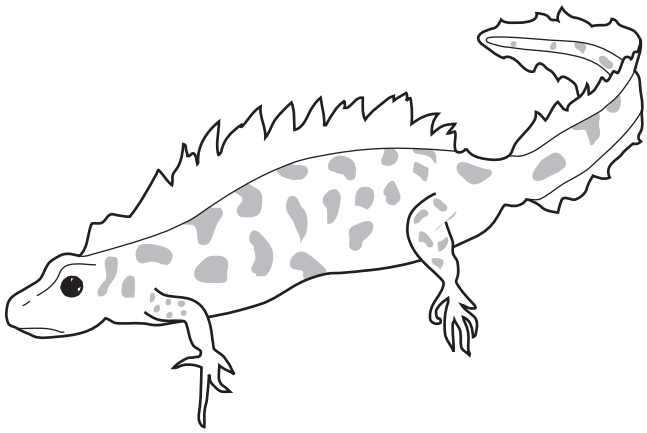
C photosynthesis

D tropism

2 What can be found in both root hair cells and xylem vessels?

	cell membrane	cell wall	cytoplasm	nucleus
A	✓	✓	✓	✓
B	✓	✗	✓	✓
C	✗	✓	✗	✗
D	✗	✗	✓	✗

3 The diagram shows an animal.



Use the key to identify the animal.

1 front limbs with five fingers ..... go to 2

front limbs with four fingers ..... go to 3

2 skin with spots ..... **A**

skin without spots ..... **B**

3 tail with fins ..... **C**

tail without fins ..... **D**

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4 How does oxygen move from the alveoli into the blood?

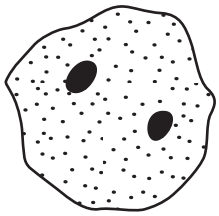
A by diffusion

B by evaporation

C by osmosis

D by transpiration

5 The diagram shows a liver cell.



In which way does this cell differ from a typical animal cell?

A It has a cell membrane.

B It has no vacuole.

C It has no cell wall.

D It has two nuclei.

6 Which row shows the main tissue and organ involved in the process?

	process	tissue	organ
A	excretion in humans	nerve	brain
B	nutrition in humans	platelets	veins
C	photosynthesis in plants	mesophyll	leaf
D	translocation in plants	epidermis	stem

7 Which structure is **not** an organ?

A artery

B flower

C spinal cord

D xylem

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8 Which process occurs by osmosis?

A plant roots absorbing mineral ions from the soil

B plant roots absorbing water from the soil

C the small intestine absorbing fatty acids into the blood

D the small intestine absorbing glucose into the blood

9 Red blood cells were placed in a dilute solution.

Movement of water across the cell membrane caused a change in their appearance.

What explains this movement?

	direction of water movement	from higher to lower water potential	from lower to higher water potential
A	in	✓	✗
B	in	✗	✓
C	out	✓	✗
D	out	✗	✓

10 What happens to most enzymes above 60 °C?

A They are denatured.

B They are destroyed by white blood cells.

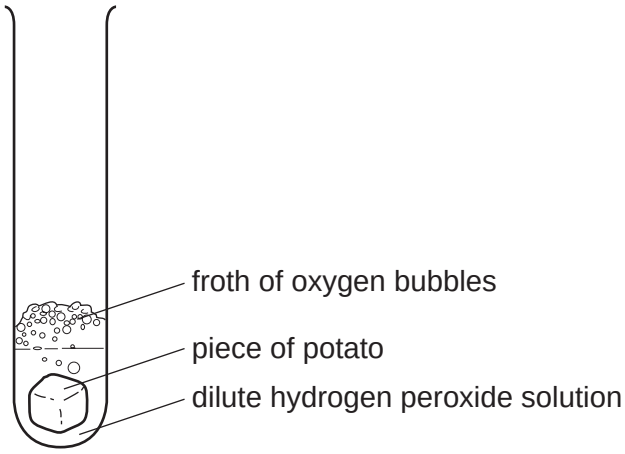
C They are digested.

D They are made more active.

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11 The enzyme catalase, found in potato, speeds up the breakdown of hydrogen peroxide. The reaction releases a froth of oxygen bubbles.

The diagram shows an experiment to find the effect of changes in pH on the rate of this reaction.



The table shows the time taken for the froth of bubbles to reach the top of the test-tube at different pH values.

pH	minutes
4	4
5	3
6	1
7	2

Which pH is nearest to the optimum (best) for this enzyme?

A pH 4 **B** pH 5 **C** pH 6 **D** pH 7

12 Which food-testing reagent shows a positive result when it turns from blue to purple?

A Benedict's solution

B biuret reagent

C ethanol

D iodine solution

13 Which two substances are needed for photosynthesis?

A carbon dioxide and glucose

B carbon dioxide and water

C oxygen and glucose

D oxygen and water

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14 Some liquid is collected from the xylem in the stem of a plant.

What is present in the liquid?

A cellulose

B inorganic ions

C starch

D sugar

15 In which list do all three blood vessels carry oxygenated blood?

A aorta, pulmonary artery, renal artery

B aorta, pulmonary vein, renal artery

C vena cava, pulmonary artery, renal vein

D vena cava, pulmonary vein, renal vein

16 In a person with a low platelet level, which process is slower than normal?

A antibody formation

B blood clotting

C oxygen carriage

D phagocytosis

17 The table shows some characteristics of four different plants.

The plants are growing in the same environmental conditions.

Which plant will have the highest rate of transpiration?

	number of leaves on plant	average surface area of one leaf / cm^2	average density of stomata on leaves / per mm^{-2}	average diameter of one stoma / μm
A	12	42	248	19
B	25	20	250	16
C	35	52	275	18
D	36	45	150	15

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18 Four metabolic reactions are shown.

1 carbon dioxide + water → glucose + oxygen

2 glucose → ethanol + carbon dioxide

3 glucose → lactic acid

4 glucose + oxygen → carbon dioxide + water

Which reactions take place in human cells to release energy?

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

19 The oxygen carrying capacity of the blood of smokers is less than that of non-smokers.

Which component of cigarette smoke causes this?

A carbon monoxide

B nicotine

C smoke particles

D tar

20 Why is yeast used in bread-making?

A to provide carbon dioxide

B to provide ethanol

C to provide lactic acid

D to provide oxygen

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21 The table shows the percentage composition of some chemicals found in blood entering the kidney of a healthy person.

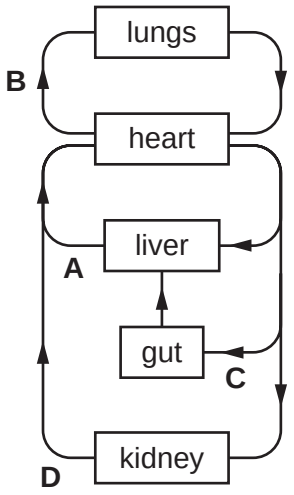
chemical	composition in blood entering kidney / %
glucose	0.10
protein	8.00
urea	0.03

What is the percentage composition of the same chemicals in the urine of a healthy person?

	composition in urine / %		
	glucose	protein	urea
A	1.00	4.00	0.03
B	0.00	4.00	0.00
C	0.00	0.00	2.00
D	0.10	8.00	2.00

22 The diagram shows part of the human circulatory system.

In which vessel do the break-down products of hormones first appear?



23 Which target organ releases glucose into the blood-stream as a result of the action of adrenaline?

A adrenal gland

B kidney

C liver

D pancreas

24 Which responses are shown by the shoot of a plant?

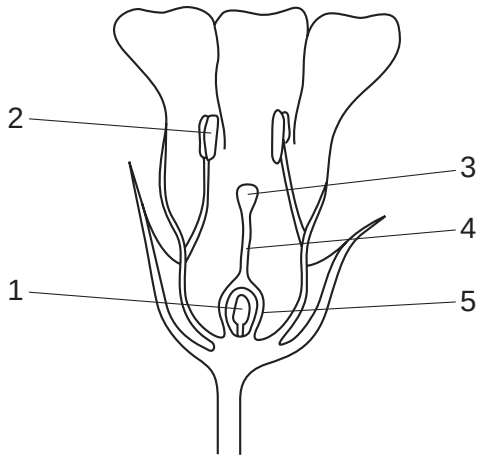
	geotropism	phototropism
A	–	–
B	–	+
C	+	–
D	+	+

key

+ grows towards the stimulus

– grows away from the stimulus

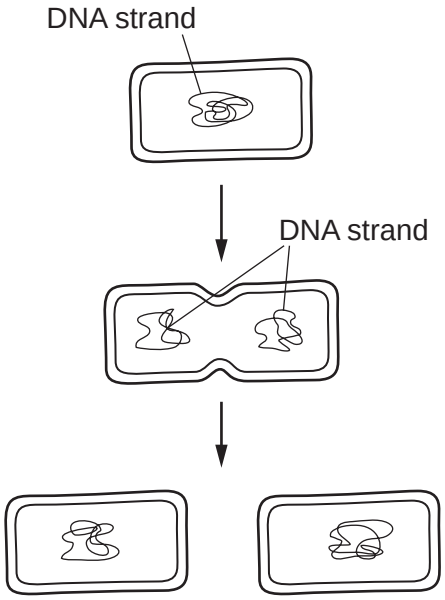
25 The diagram shows a flower in vertical section.



Which numbered parts of the flower continue to develop after fertilisation?

A 1 and 5 **B** 2 and 4 **C** 3 and 5 **D** 4 and 5

26 The diagram shows a cell dividing into two.



Which process is shown in the diagram?

A asexual reproduction in a bacterium

B asexual reproduction in a potato plant

C meiosis in a woman's ovary

D mitosis in the root of a plant

27 Some bean seeds are planted 2 cm below the surface of some soil in a tray.

Which process will **not** occur as the seeds start to germinate?

A growth

B osmosis

C photosynthesis

D respiration

28 What may be defined as 'an increase in dry mass'?

A growth

B nutrition

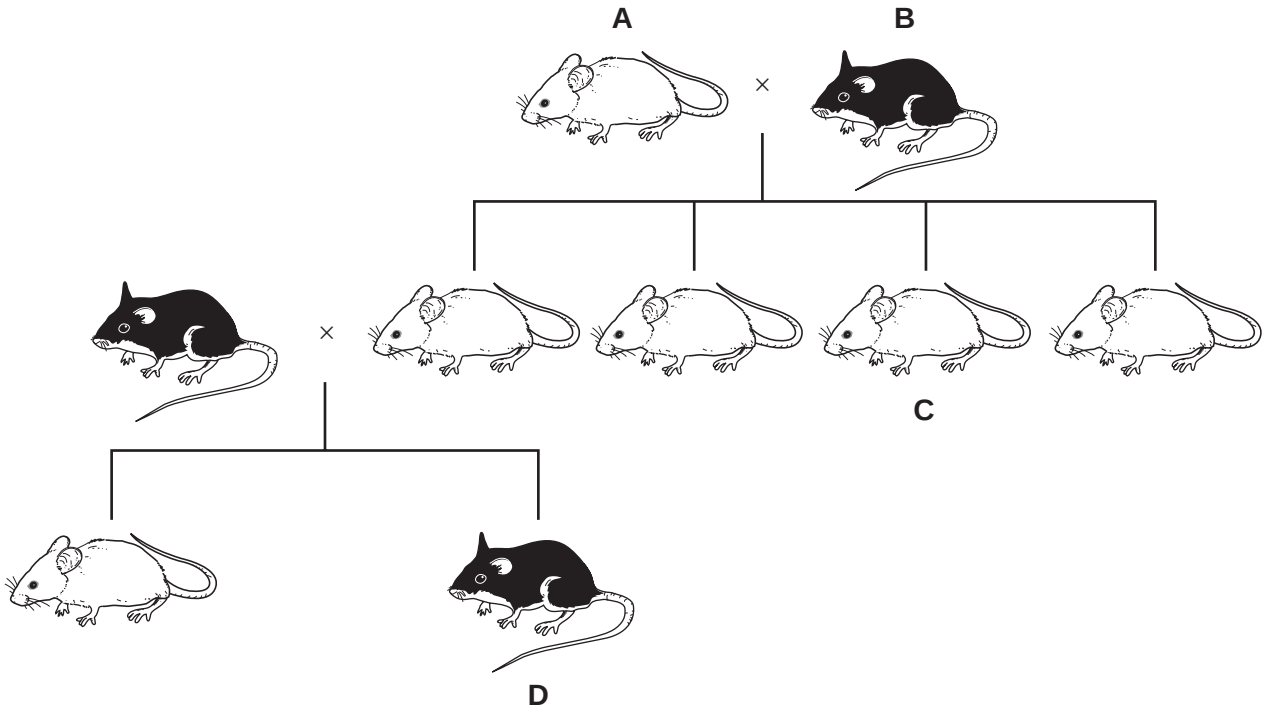
C reproduction

D respiration

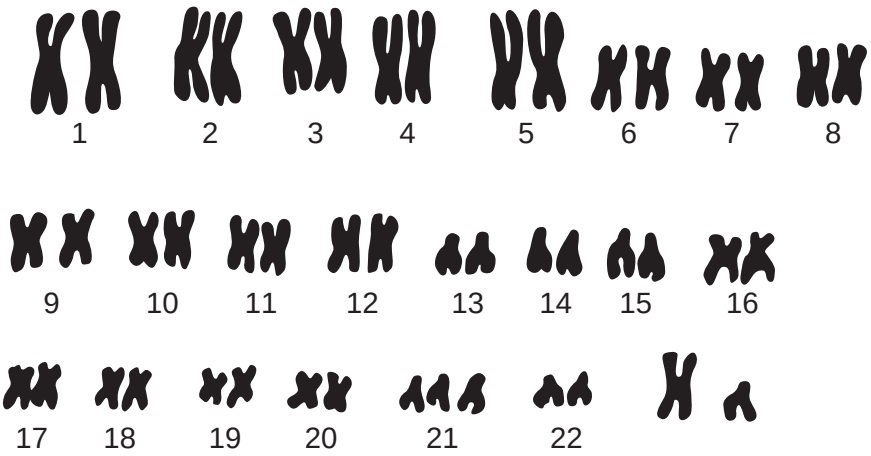
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29 The chart shows the inheritance of fur colour in a small mammal.

If the allele for white fur is dominant, which animal **must** be heterozygous for the gene controlling fur colour?



30 The diagram shows the chromosomes from one person.



What can be deduced about the person who has these chromosomes?

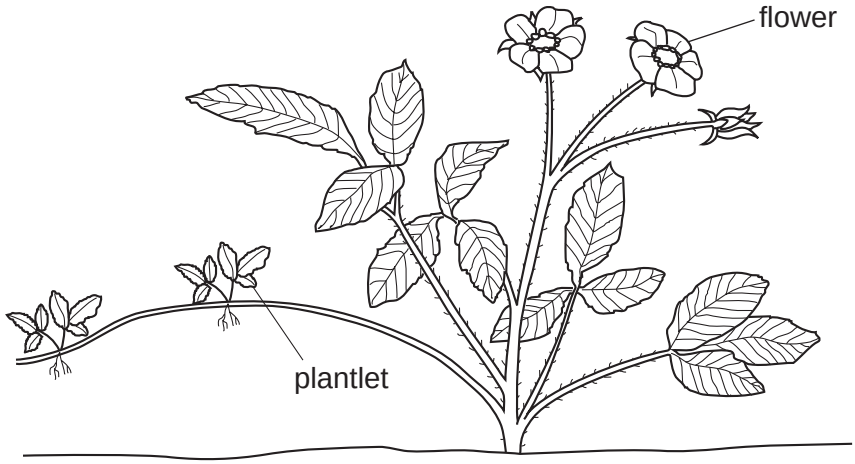
A a female with Down's syndrome

B a male with Down's syndrome

C a normal female

D a normal male

31 The diagram shows a plant that is producing small plantlets.



Which statement about the plantlets is correct?

A They are genetically different from the parent plant.

B They are genetically identical to the parent plant.

C They are produced as a result of the fusion of nuclei.

D They are produced by fertilising the flowers.

32 Which diagram shows energy passing along a food chain?

A producer → primary consumer → secondary consumer → tertiary consumer

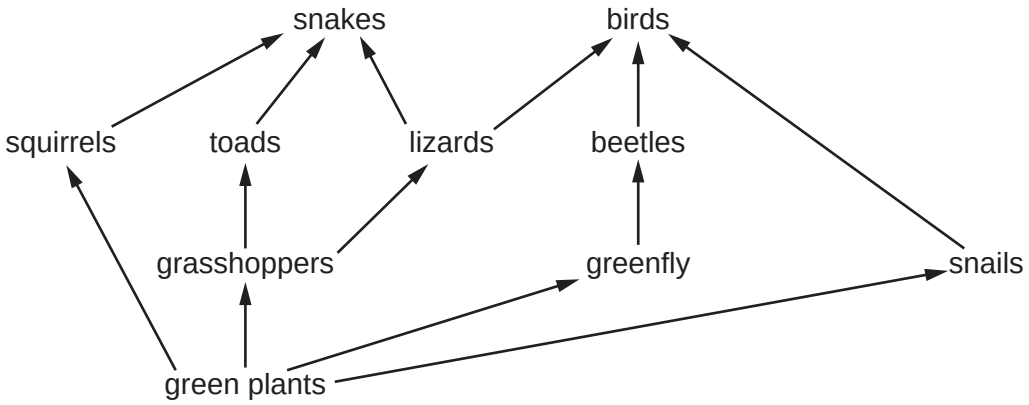
B producer → primary consumer ← secondary consumer ← tertiary consumer

C producer ← primary consumer ← secondary consumer ← tertiary consumer

D producer → ← primary consumer → ← secondary consumer → ← tertiary consumer

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33 The diagram shows a food web.



Which organisms will increase in number, if the number of snakes increases?

A birds

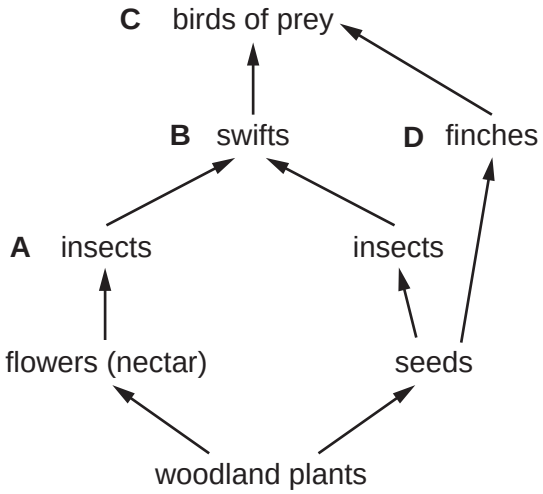
B grasshoppers

C lizards

D squirrels

34 The diagram shows some feeding relationships in a woodland area.

Which of the labelled animals are in competition with seed-eating insects for their food?



35 Which process does **not** release water?

A excretion

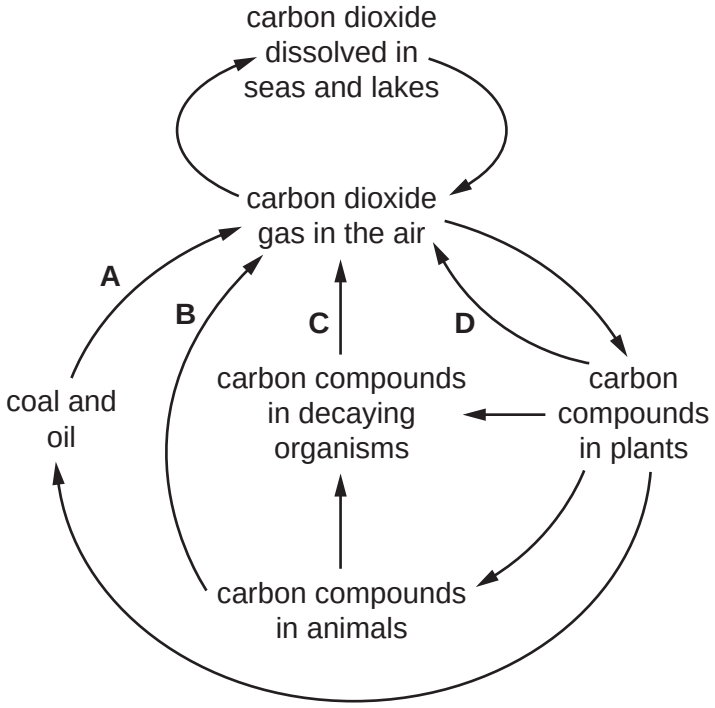
B photosynthesis

C respiration

D transpiration

36 The diagram shows the carbon cycle.

Which process produces carbon dioxide from substances made by photosynthesis millions of years ago?



37 Which statement about population growth is correct?

A The rate of population growth decreases as disease increases.

B The rate of population growth increases as food supply decreases.

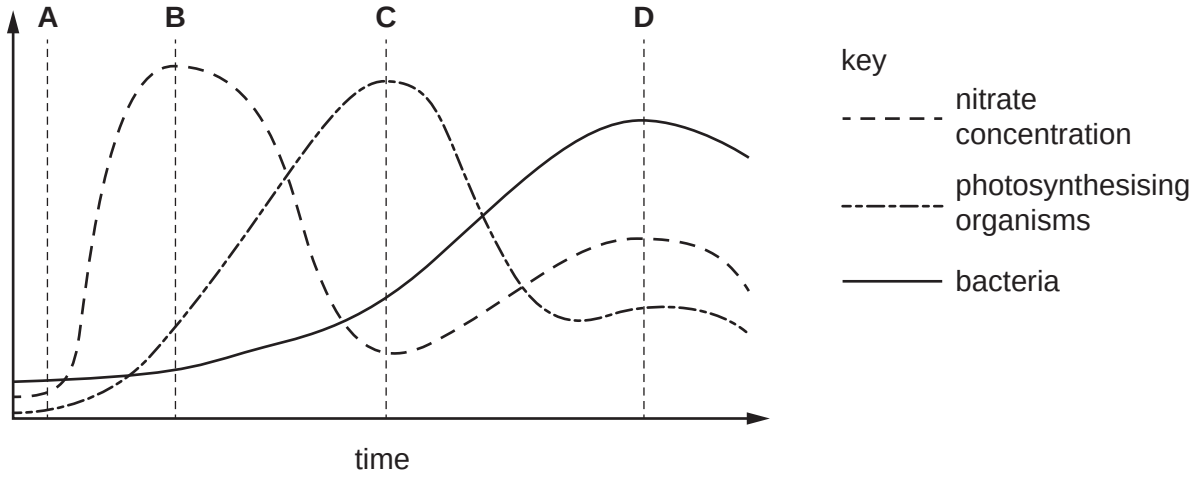
C The rate of population growth increases when predation increases.

D The rate of population growth is not affected by social conditions.

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38 The graph shows changes in part of a lake after it has been polluted by fertilisers from a nearby farm.

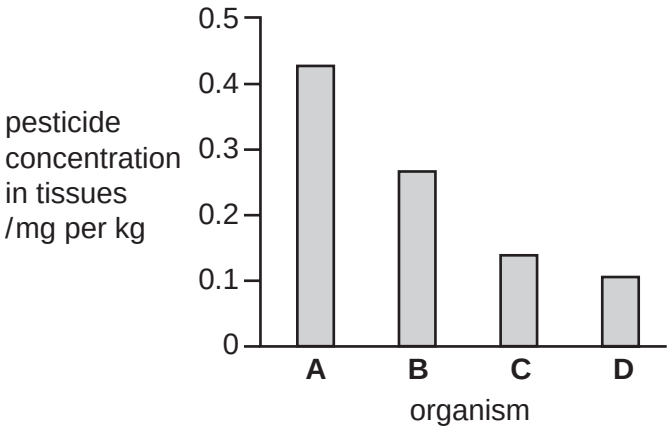
At which time will the oxygen concentration in the water be lowest?



39 The concentration of a pesticide in the tissues of the organisms in the following food chain was measured.

plants → small fish → large fish → birds of prey

Which bar on the chart represents the large fish?



40 Which activity will be **least** likely to lead to the extinction of species?

A conservation

B deforestation

C use of herbicides

D use of pesticides

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