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Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

BIOLOGY **0610/12**

Paper 1 Multiple Choice (Core) **February/March 2017**

45 minutes

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

* 1 9 6 2 7 7 0 6 2 2 *

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 **17** printed pages and **3** blank pages.

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1 The drawing shows a ground squirrel.



Which feature identifies this animal as a mammal?

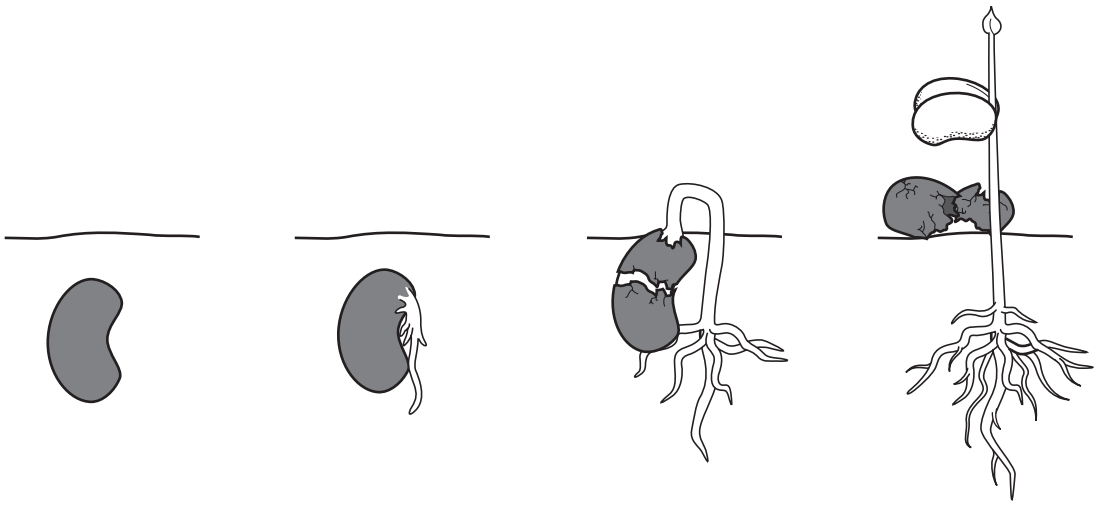
A eye

B four limbs

C fur

D tail

2 The diagram shows how a seed changes after it is planted in soil and watered.



Which characteristics of living things are demonstrated by this sequence?

A excretion and growth

B growth and sensitivity

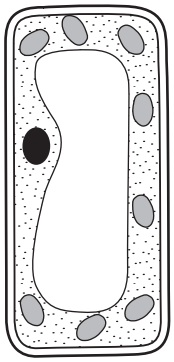
C nutrition and reproduction

D nutrition and sensitivity

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3 The diagram shows a palisade cell from a leaf.



How does a palisade cell differ from the other cells in the same plant?

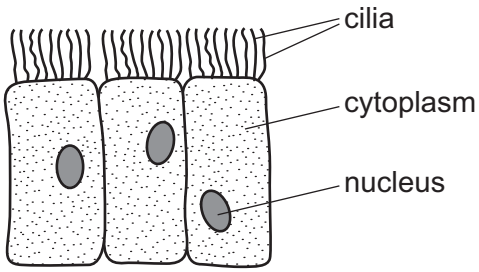
A It has a cell wall.

B It has a nucleus.

C It has a smaller vacuole.

D It has more chloroplasts.

4 The diagram shows some cells.



Where are these cells found?

A alimentary canal

B blood

C bronchus

D plant roots

5 The length of a specimen in a photograph is 45 mm. Its actual length is 25 mm.

What is the magnification of the photograph?

A ×0.6 **B** ×1.6 **C** ×1.8 **D** ×1125

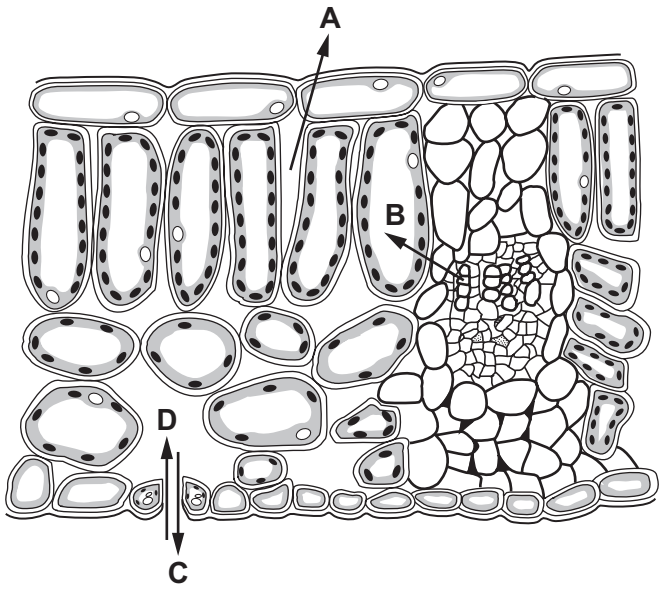
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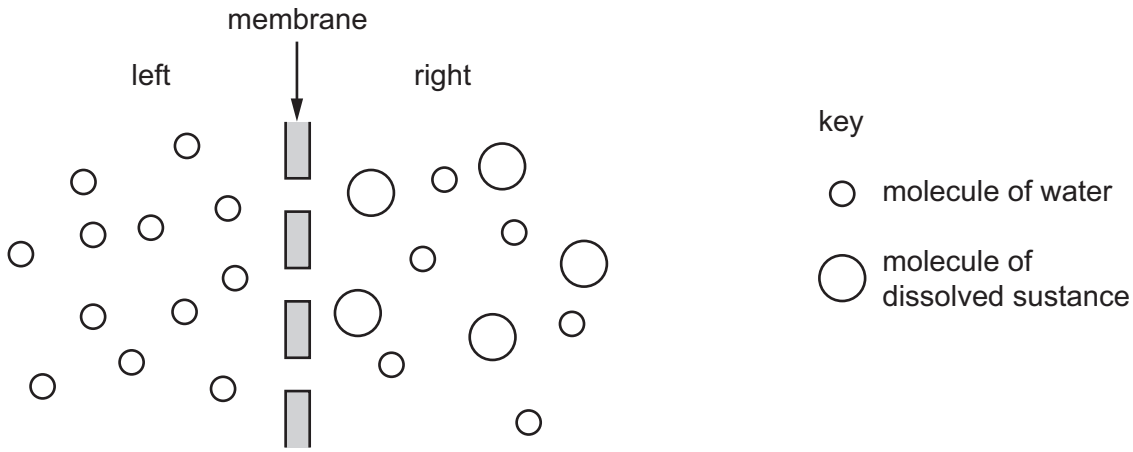
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6 The diagram shows a section through a leaf.

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



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



Which statement describes how the molecules will move?

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.

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8 Which element is found in proteins but **not** carbohydrates?

A carbon

B hydrogen

C nitrogen

D oxygen

9 Two samples of a human enzyme were used in an experiment. Before they were used

- sample **X** was heated to 80 °C and then cooled to 37 °C,
- sample **Y** was cooled to 0 °C and then heated to 37 °C.

How will this affect their activity?

A Sample **X** and sample **Y** are no longer active.

B Sample **X** and sample **Y** will be equally active.

C Sample **X** will be more active than sample **Y**.

D Sample **Y** will be more active than sample **X**.

10 Which substances are used for photosynthesis?

A carbon dioxide and glucose

B carbon dioxide and water

C glucose and oxygen

D glucose and water

11 Which term is defined as the taking of substances into the body through the mouth?

A absorption

B assimilation

C digestion

D ingestion

12 What is needed to make the haemoglobin in red blood cells?

A calcium

B iron

C roughage

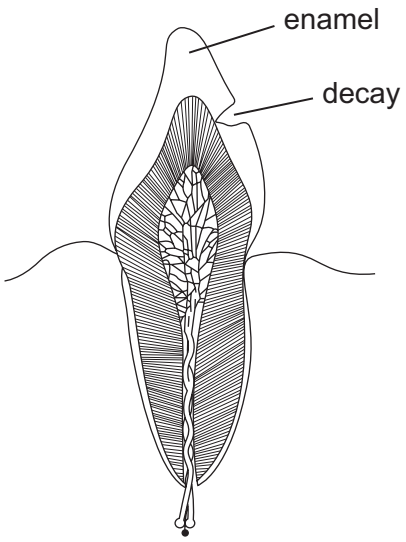
D vitamin D

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13 The diagram shows a tooth with signs of decay.



What has made the hole in the enamel of the tooth?

A acid

B saliva

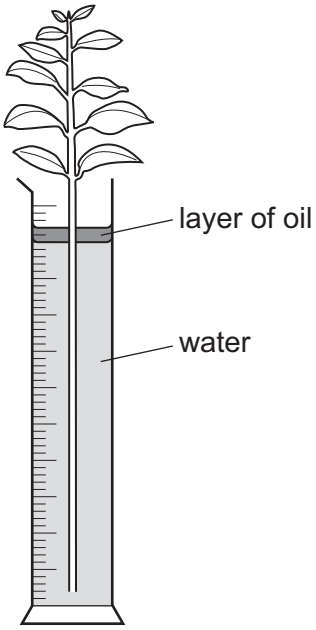
C sugar

D toothpaste

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14 Four leafy plant stems were placed into measuring cylinders with 100 cm^3 of water. A layer of oil prevented the water in the measuring cylinder from evaporating.



The plant stems were exposed to different air humidities and temperatures for 48 hours as shown in the table.

plant stem	humidity	temperature / °C	final volume of water / cm^3
1	low	5	75
2	low	25	
3	high	5	95
4	high	25	65

The final volume of water in the measuring cylinders is shown for plant stems 1, 3 and 4.

What would be a likely final volume for plant stem 2?

A less than 65 cm^3

B between 65 cm^3 and 75 cm^3

C between 75 cm^3 and 95 cm^3

D greater than 95 cm^3

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15 Which blood vessel, if it becomes blocked, could lead **directly** to a heart attack?

A coronary artery

B pulmonary artery

C pulmonary vein

D vena cava

16 A hospital patient who is feeling unwell is given a blood test.

The results of the blood test show a very low level of platelets.

What effect will this have?

A The blood will be unable to transport nutrients, hormones and carbon dioxide.

B The blood will not be able to carry as much oxygen to the tissues as normal.

C There will be a greater risk of bleeding because the blood will take longer to clot.

D There will be a greater risk of infection because the blood cannot make antibodies.

17 What is a pathogen?

A a bacterium

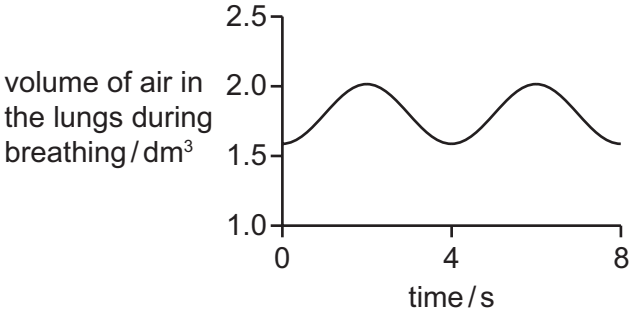
B a disease-causing organism

C a disease that is transmissible

D a white blood cell that engulfs bacteria

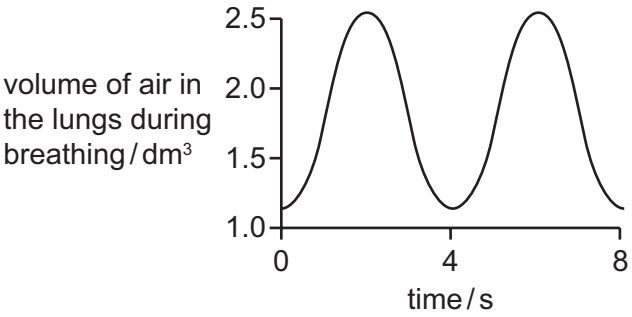
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18 The graph shows the rate and depth of a person's breathing before exercise.

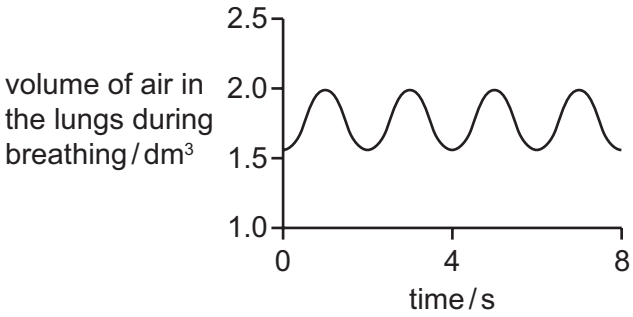


Which graph shows the rate and depth of breathing of the same person immediately after a period of exercise?

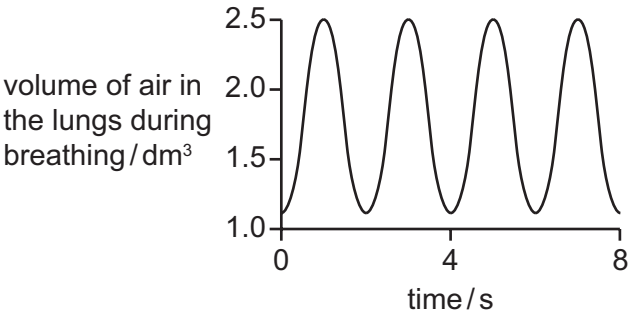
A



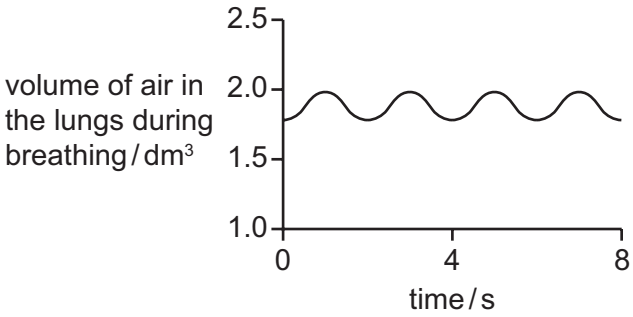
B



C



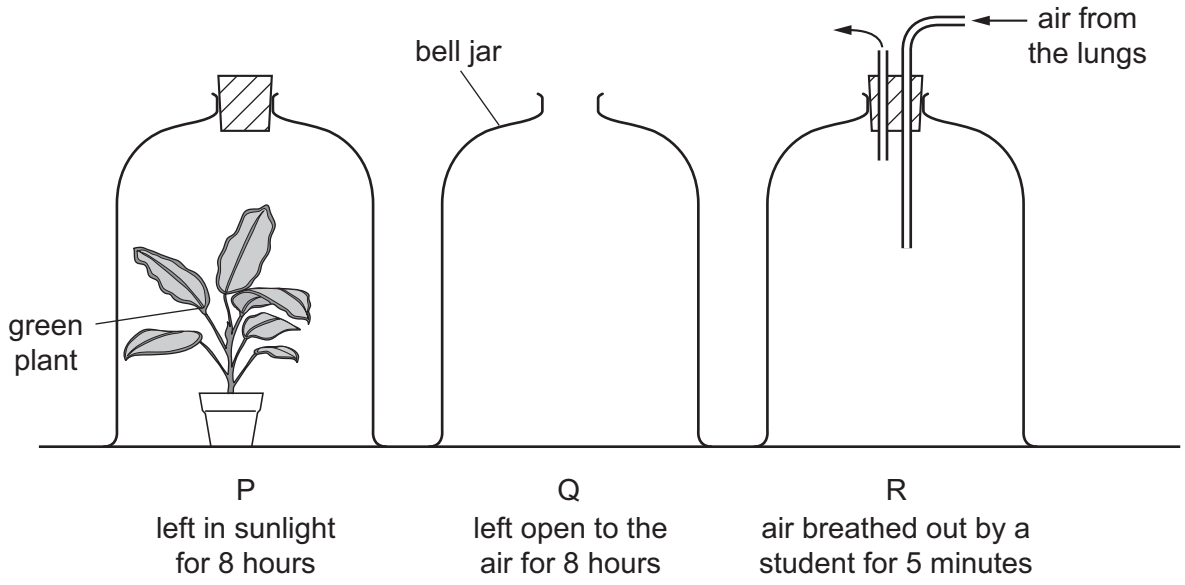
D



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19 In an experiment, three glass bell jars were set up as shown in the diagram.



At the end of the experiment, which bell jar has the most oxygen and which has the least?

	most oxygen	least oxygen
A	P	Q
B	P	R
C	Q	P
D	R	P

20 What are the products of anaerobic respiration in muscles?

A ethanol and carbon dioxide

B ethanol only

C lactic acid and carbon dioxide

D lactic acid only

21 Which substance remains in the blood as it passes through the kidney?

A protein

B salts

C urea

D water

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22 When the nervous system responds to a stimulus there are several stages to the response.

1 The central nervous system processes the information.

2 The receptors detect the stimulus.

3 A nerve impulse is sent to the central nervous system.

4 A response is produced.

5 A nerve impulse is sent to the muscles.

What is the correct order of the stages?

A 2, 3, 1, 5, 4

B 2, 3, 5, 1, 4

C 3, 2, 1, 5, 4

D 3, 2, 5, 1, 4

23 In which parts of the body are there receptors for blood temperature?

	brain	fatty tissue of the skin
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

24 Which row shows the effects of increased adrenaline release?

	breathing rate	pulse rate	pupil
A	decreases	increases	widens
B	increases	decreases	widens
C	increases	increases	narrows
D	increases	increases	widens

25 Which statement about the growth response of a plant shoot is correct?

A It grows away from gravity and away from light.

B It grows away from gravity and towards light.

C It grows towards gravity and away from light.

D It grows towards gravity and towards light.

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26 A patient is suffering from an infection. Her doctor prescribes an antibiotic.

One week later the infection is still present.

What could be the reason for this?

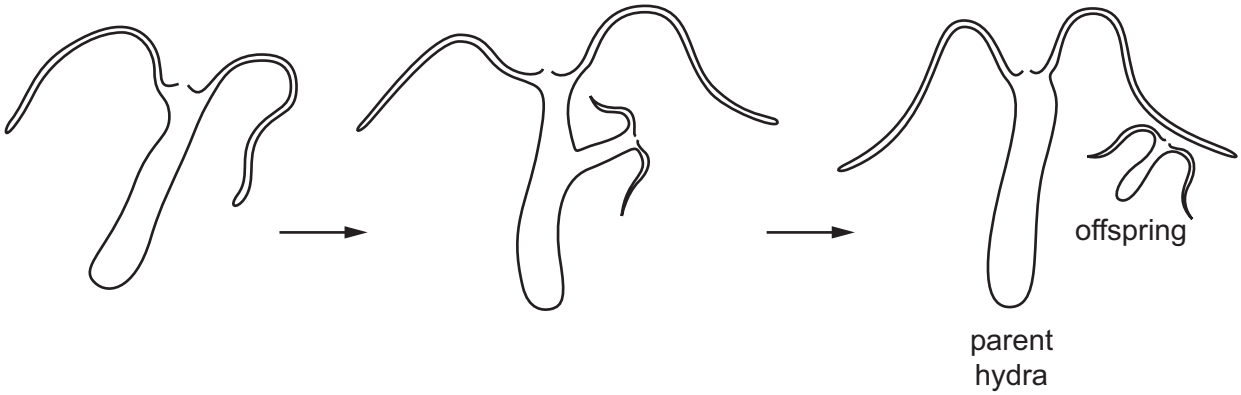
A It was the correct antibiotic for this infection.

B The pathogen was a virus.

C The pathogen was resistant to the antibodies.

D The patient was resistant to the antibiotic.

27 The diagram shows *Hydra* growing and releasing an offspring from the side of its body.



Which row is correct?

	parent and offspring are genetically identical	uses sexual reproduction
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

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28 The photograph shows the structures needed for reproduction in the flower of a dicotyledon.



What is the part labelled P?

A a stigma

B a style

C an anther

D an ovary

29 What is the name of the organ in which a human fetus grows until it is born?

A bladder

B ovary

C urethra

D uterus

30 What would protect against a sexually transmitted infection?

A contraceptive implant

B use of a condom

C use of a diaphragm

D vasectomy

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31 Which term describes the transmission of genetic information from one generation to the next?

A genetic engineering

B inheritance

C natural selection

D variation

32 What is a gene?

A a chain of amino acids that codes for a protein

B a length of DNA that codes for a protein

C a length of protein that codes for an allele

D a structure that codes for the production of DNA

33 Which process involves meiosis?

A growth of cells

B production of gametes

C repair of damaged tissues

D replacement of cells

34 The allele for brown coat colour is dominant to the allele for albino coat colour.

A homozygous brown-coated mammal is crossed with a heterozygous brown-coated mammal.

What percentage of the offspring will be albino?

A 0% **B** 25% **C** 50% **D** 100%

35 Which description of an adaptive feature is correct?

A a change in phenotype that is caused by the environment

B a change in the environment that is an advantage to an organism

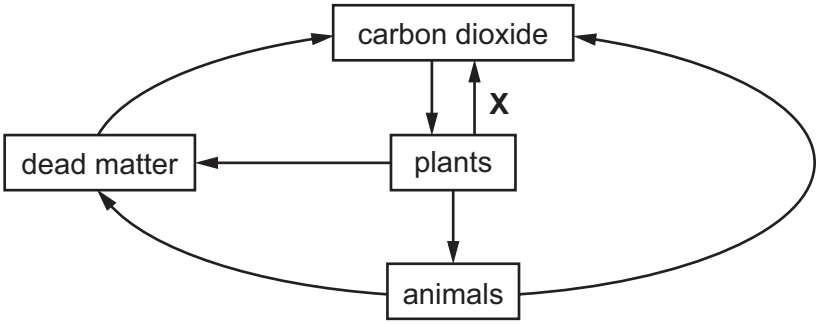
C an action by an organism that aids its ability to survive and reproduce

D an inherited feature that increases an organism's ability to survive and reproduce

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36 The diagram shows part of the carbon cycle.



What does arrow **X** represent?

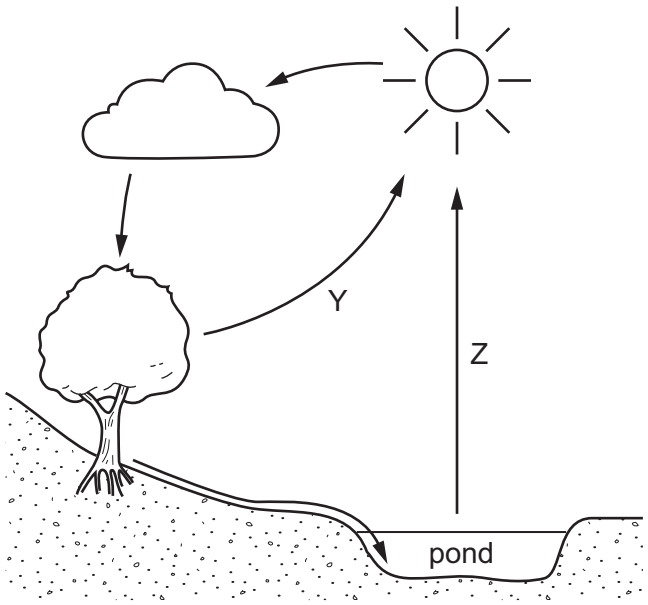
A decay

B nutrition

C photosynthesis

D respiration

37 The diagram shows the water cycle.



Which processes do Y and Z represent?

	Y	Z
A	condensation	evaporation
B	precipitation	evaporation
C	transpiration	condensation
D	transpiration	evaporation

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38 What is inserted into a bacterium to make the bacterium produce insulin?

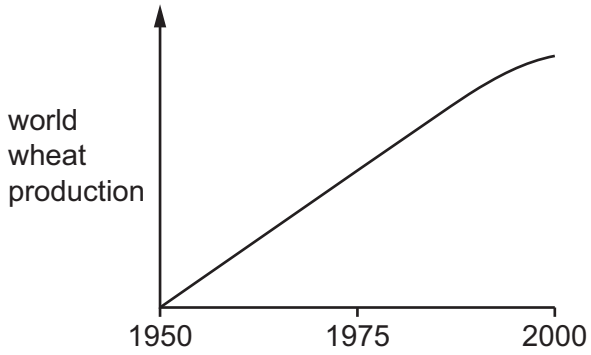
A a length of DNA from a human

B a length of DNA from another bacterium

C a molecule of insulin

D an enzyme

39 The graph shows world wheat production from 1950 to 2000.



What has contributed to the changes shown in wheat production?

A not using herbicides

B not using insecticides

C using selective breeding

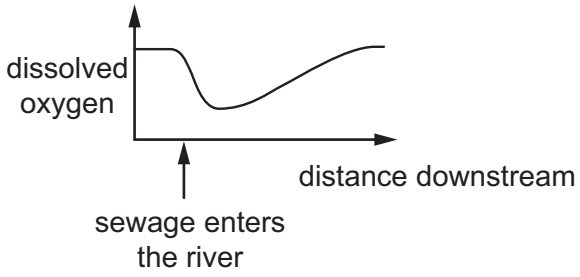
D using smaller areas of land

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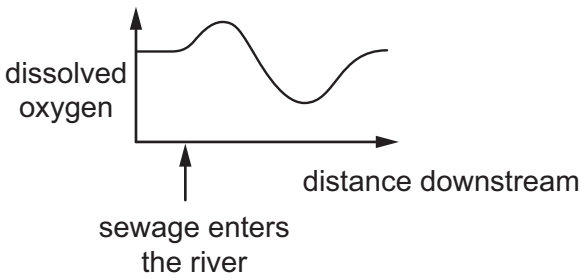
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40 Which graph shows the effect of pollution by untreated sewage on the amount of oxygen dissolved in a river?

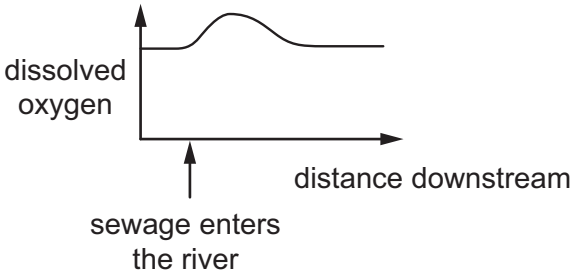
A



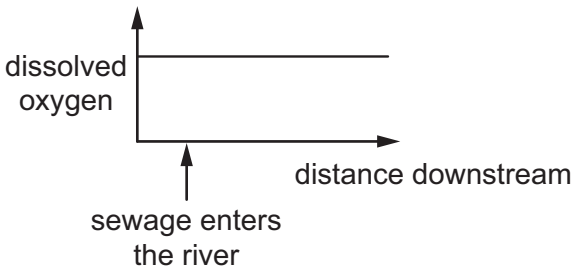
B



C



D



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