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Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

BIOLOGY **0610/12**

Paper 1 Multiple Choice (Core) **May/June 2016**

45 minutes

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

* 3 3 2 2 4 1 8 2 8 1 *

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.

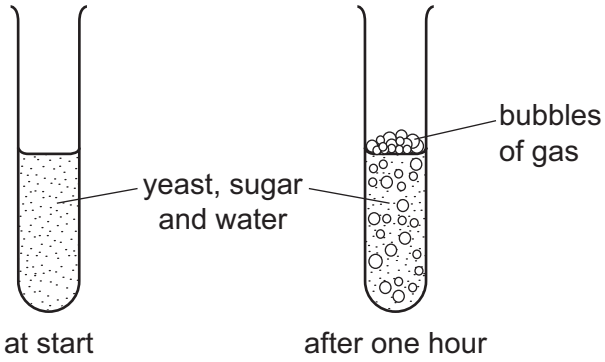
The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

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

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1 Some yeast, sugar and water are mixed in a test-tube. The diagrams show the test-tube at the start and after one hour.



Which process causes this change?

A growth

B reproduction

C respiration

D sensitivity

2 A rat has the scientific name *Rattus rattus*.

What do the two parts of this name refer to?

A genus and species

B kingdom and genus

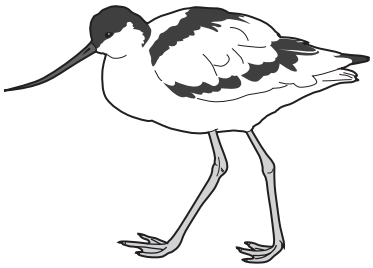
C kingdom and species

D variety and genus

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3 The diagram shows a bird that lives near rivers.



Use the key to identify the bird shown in the diagram.

1	toes joined by a flap of skin	go to 2
	toes separate	**A** heron
2	beak as long or longer than the head	go to 3
	beak not as long as the head	**B** little grebe
3	top of head black	**C** avocet
	top of head white	**D** mute swan

4 In a plant, what is formed by a group of xylem vessels?

A a cell

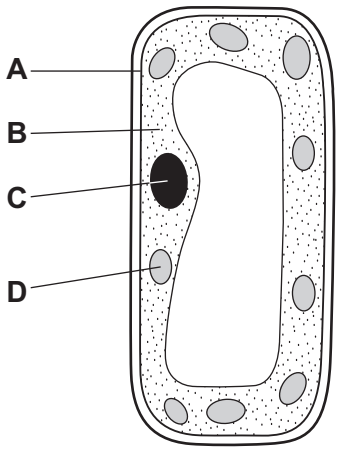
B a tissue

C an organ

D an organ system

5 The diagram shows a palisade mesophyll cell.

Which structure is **not** found in an animal cell?



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6 Which statement is correct for phloem but **not** for xylem?

A It carries mineral ions.

B It carries starch.

C It carries sucrose.

D It is no longer living.

7 Why does oxygen diffuse into the blood from an alveolus in the lungs?

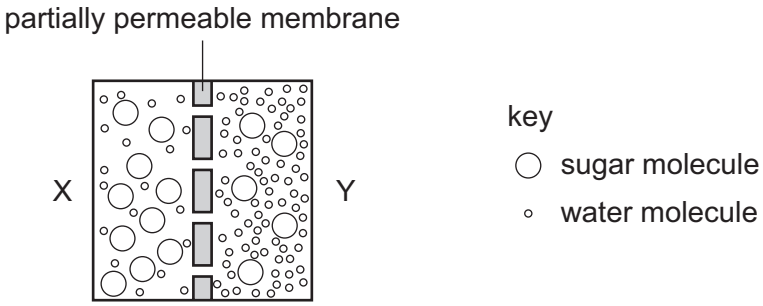
A The oxygen concentration in the alveolus is greater than the carbon dioxide concentration in the blood.

B The oxygen concentration in the alveolus is greater than in the blood.

C The oxygen concentration in the blood is greater than in the alveolus.

D The oxygen concentration in the blood is greater than the carbon dioxide concentration in the alveolus.

8 The diagram shows water and sugar molecules on either side of a partially permeable membrane.



What happens during osmosis?

A More sugar molecules pass through the membrane from X to Y than from Y to X.

B More sugar molecules pass through the membrane from Y to X than from X to Y.

C More water molecules pass through the membrane from X to Y than from Y to X.

D More water molecules pass through the membrane from Y to X than from X to Y.

9 Small molecules are used as the basic units in the synthesis of large food molecules.

Which statement is correct?

A Amino acids are basic units of carbohydrates.

B Fatty acids are basic units of glycogen.

C Glycerol is a basic unit of oils.

D Simple sugar is a basic unit of protein.

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10 When a substance is added to meat, amino acids are produced.

What is this substance?

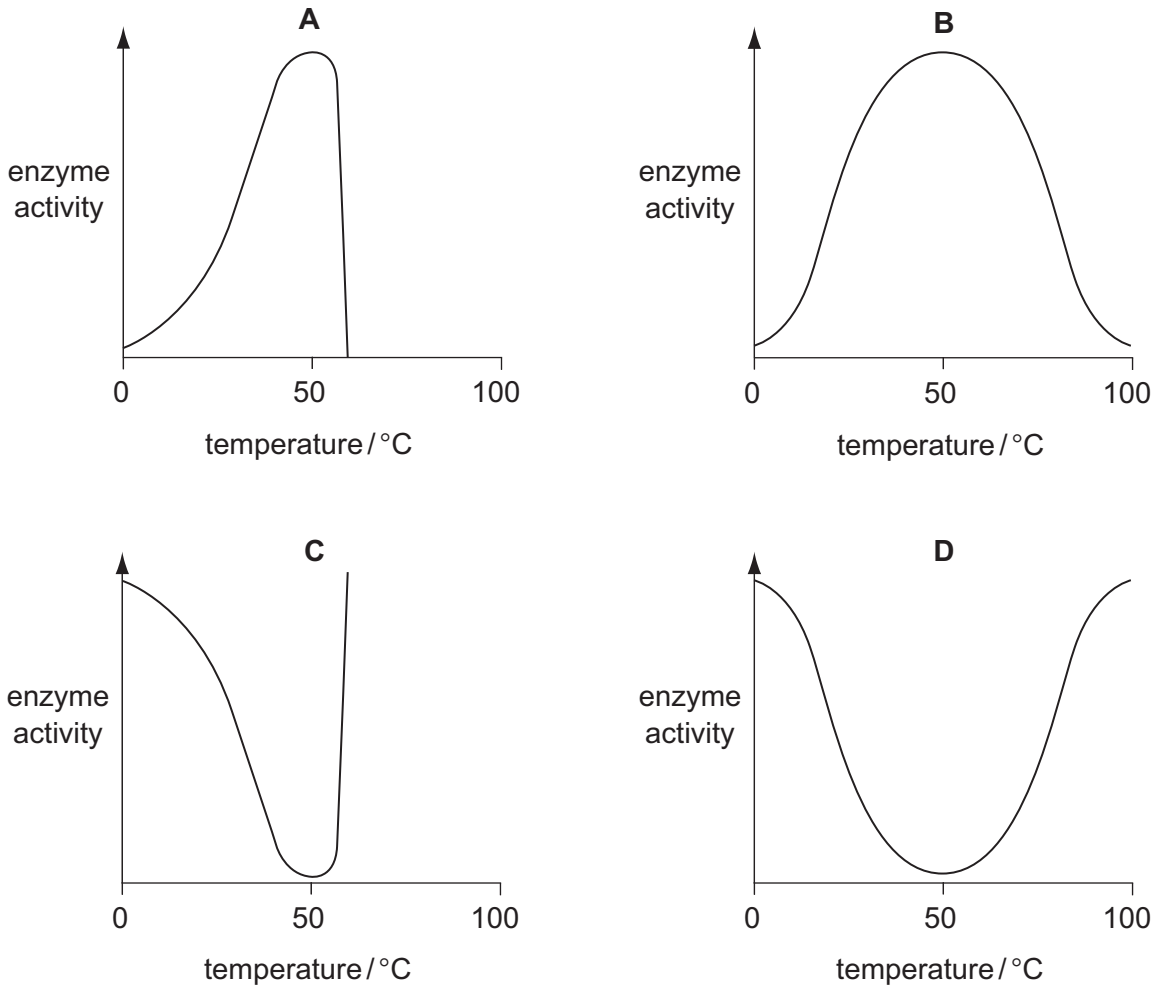
A a hormone

B an enzyme

C an oil

D water

11 Which graph shows the effect of temperature on the activity of an enzyme?



12 Which two substances are the products of photosynthesis?

A carbon dioxide and glucose

B carbon dioxide and water

C oxygen and carbon dioxide

D oxygen and glucose

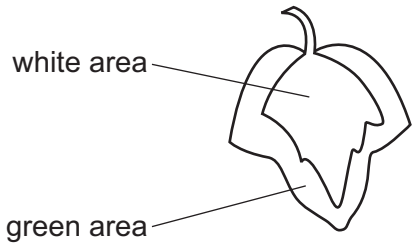
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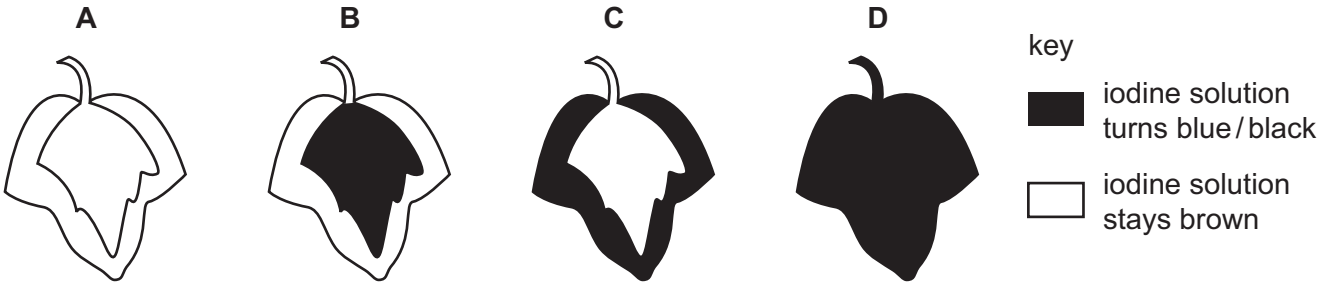
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13 In a photosynthesis experiment, a plant is left in bright sunlight for several hours. A leaf is then removed from the plant and tested for starch, using iodine solution.

The diagram shows the leaf from the plant that was used in the experiment.



Which diagram shows the result of the experiment?



14 Which type of food is **not** digested before being absorbed by the body?

A carbohydrate

B fat

C protein

D water

15 The bacterium *Salmonella enterica* can cause severe food poisoning and the lining of the alimentary canal may be damaged. In these cases absorption of digested food products cannot easily take place.

Which region of the alimentary canal is most affected?

A colon

B ileum

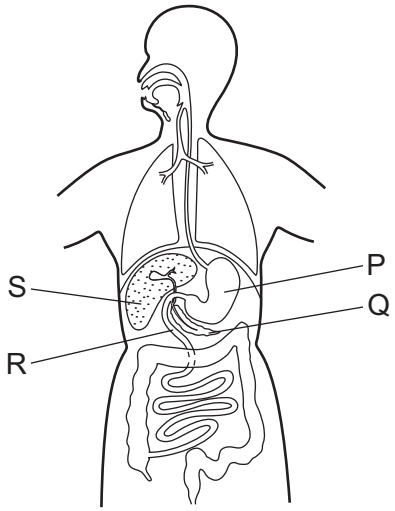
C oesophagus

D stomach

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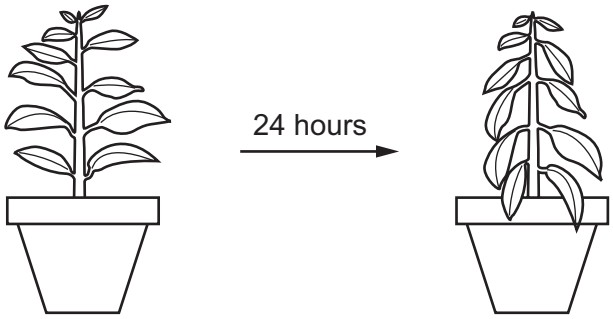
16 The diagram shows some of the organs of the human body.



In which organs does the digestion of proteins take place?

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

17 The diagram shows a potted plant and the same plant 24 hours later.



What causes the change in the appearance of the plant?

A Water loss is greater than water uptake.

B Water moves from the leaves to the stem.

C Water uptake is equal to water loss.

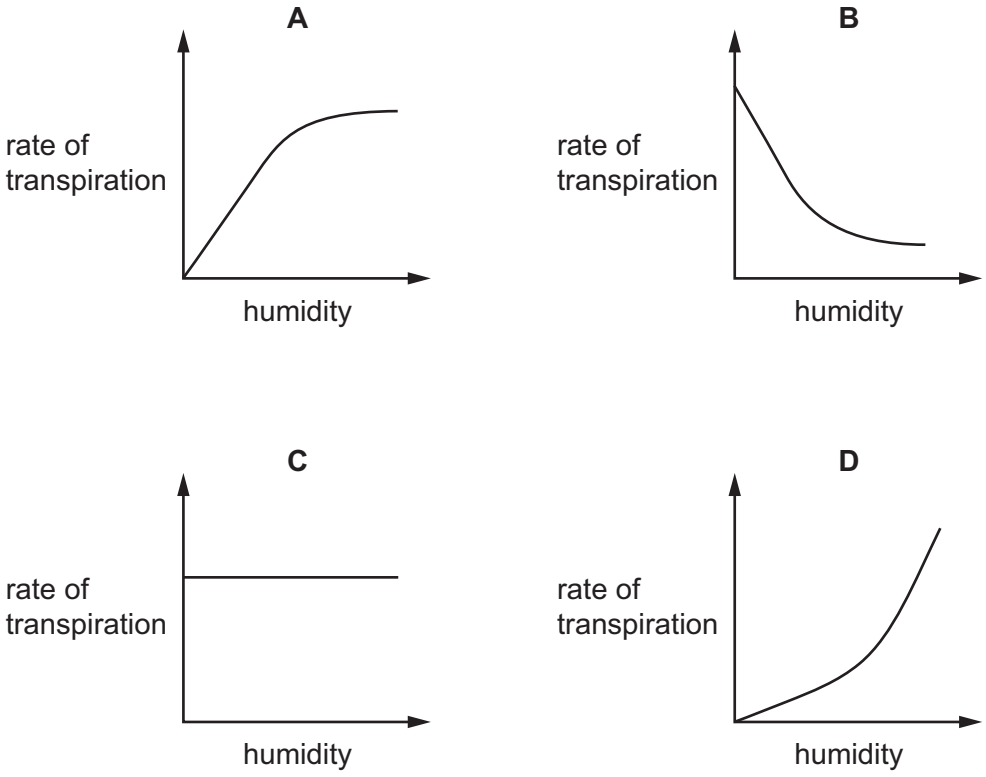
D Water uptake is greater than water loss.

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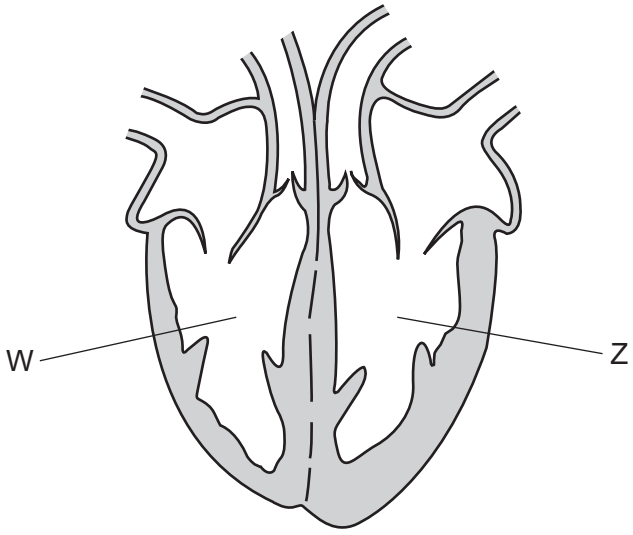
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18 Which graph shows most clearly what will happen to the rate of transpiration as humidity increases?



19 The diagram shows the human heart and some of the blood vessels connected to it.



Before blood in W reaches Z it must

A gain glucose.

B give up heat to the skin.

C pass through capillaries.

D travel to the head.

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20 Which substances are dissolved in human blood plasma?

A carbon dioxide, haemoglobin and glucose

B carbon dioxide, oxygen and haemoglobin

C glucose, hormones and urea

D oxygen, urea and starch

21 What are the approximate percentages of oxygen and carbon dioxide in atmospheric air?

	oxygen / %	carbon dioxide / %
A	16	4.00
B	16	8.00
C	20	0.04
D	20	4.00

22 Which route is taken by air passing from the lungs of a human to the atmosphere?

A alveolus → bronchus → trachea

B alveolus → trachea → bronchus

C bronchus → alveolus → trachea

D trachea → alveolus → bronchus

23 During aerobic respiration glucose is broken down.

What is released in this process?

	carbon dioxide	energy	water
A	✓	✓	✓
B	✓	✓	✗
C	✓	✗	✓
D	✗	✓	✓

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24 Which processes depend on the action of enzymes?

1 digestion

2 osmosis

3 respiration

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

25 Which diet will cause the liver to produce the most urea?

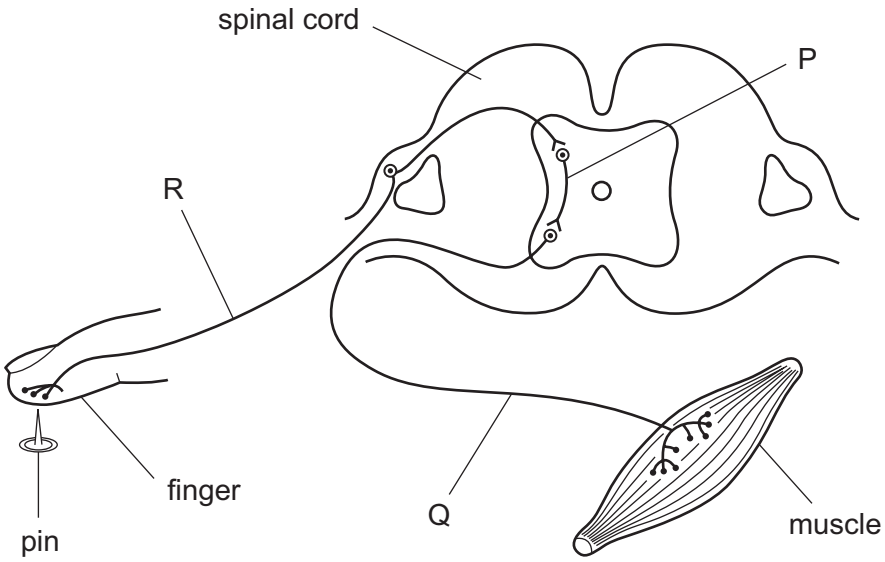
A high carbohydrate, low fat

B high fat, high fibre

C high fat, low protein

D high protein, low carbohydrate

26 The diagram represents a simple reflex arc.



What is the sequence of nerve cells through which an impulse passes during a reflex action?

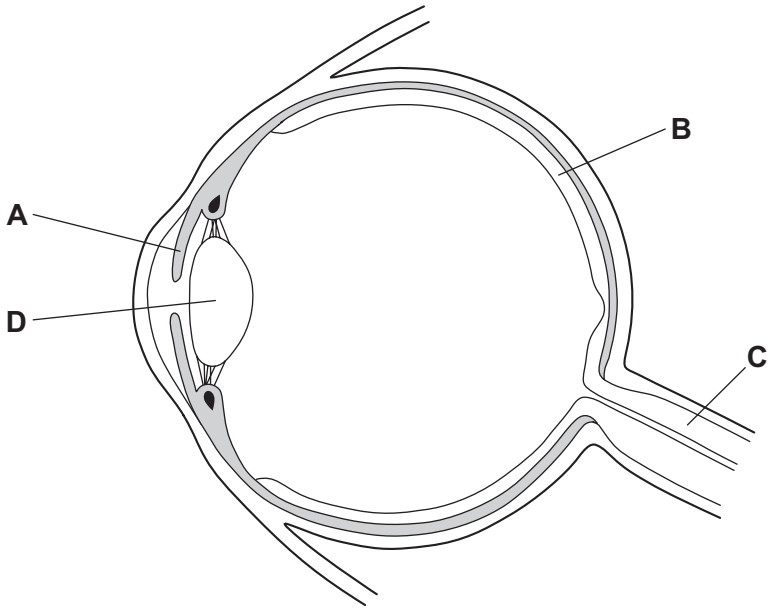
	first →		last
A	P	Q	R
B	Q	R	P
C	Q	P	R
D	R	P	Q

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27 The diagram shows a section through an eye.

Which structure controls how much light enters the pupil?



28 What are the effects of adrenaline?

	breathing rate	pulse rate
A	decreased	decreased
B	increased	increased
C	increased	no effect
D	no effect	increased

29 Which organ breaks down heroin and alcohol?

A bladder

B brain

C kidney

D liver

30 In which conditions will seeds germinate most quickly?

A dry and cold

B dry and warm

C wet and cold

D wet and warm

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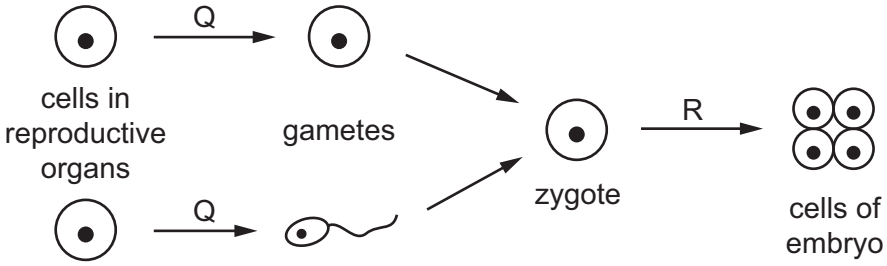
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31 What are the characteristics of asexual reproduction?

	fusion of gamete nuclei	genetic variety in the offspring
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

32 The diagram represents processes in sexual reproduction.



Which processes are represented by stages Q and R?

	Q	R
A	meiosis	meiosis
B	meiosis	mitosis
C	mitosis	meiosis
D	mitosis	mitosis

33 Which name is given to the observable features of an organism?

A alleles

B genes

C genotype

D phenotype

34 Which structure will be found in the nucleus of a body cell in a woman?

A X allele

B X chromosome

C Y allele

D Y chromosome

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35 What is a mutation?

A a change in a gene or chromosome

B a condition caused by a dominant allele

C a process used in genetic engineering

D a type of continuous variation

36 In the food chain below, the population of snakes is halved owing to a viral disease.

grass → locusts → snakes → eagles

What effect does this have on the other members of the food chain?

	grass	locusts	eagles
A	decrease	increase	decrease
B	decrease	increase	increase
C	increase	decrease	decrease
D	increase	increase	decrease

37 Which is an example of a population?

A all the animals and plants living in a pond

B all the mahogany trees growing in a forest

C all the people born in a country over a period of 100 years

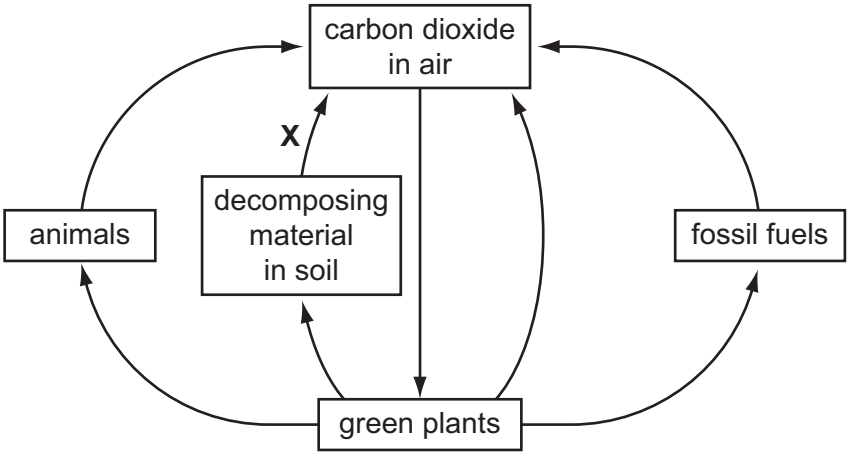
D all the species of animals in Africa

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38 The diagram represents the carbon cycle.



Which process is represented by arrow **X**?

A combustion

B feeding

C photosynthesis

D respiration

39 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

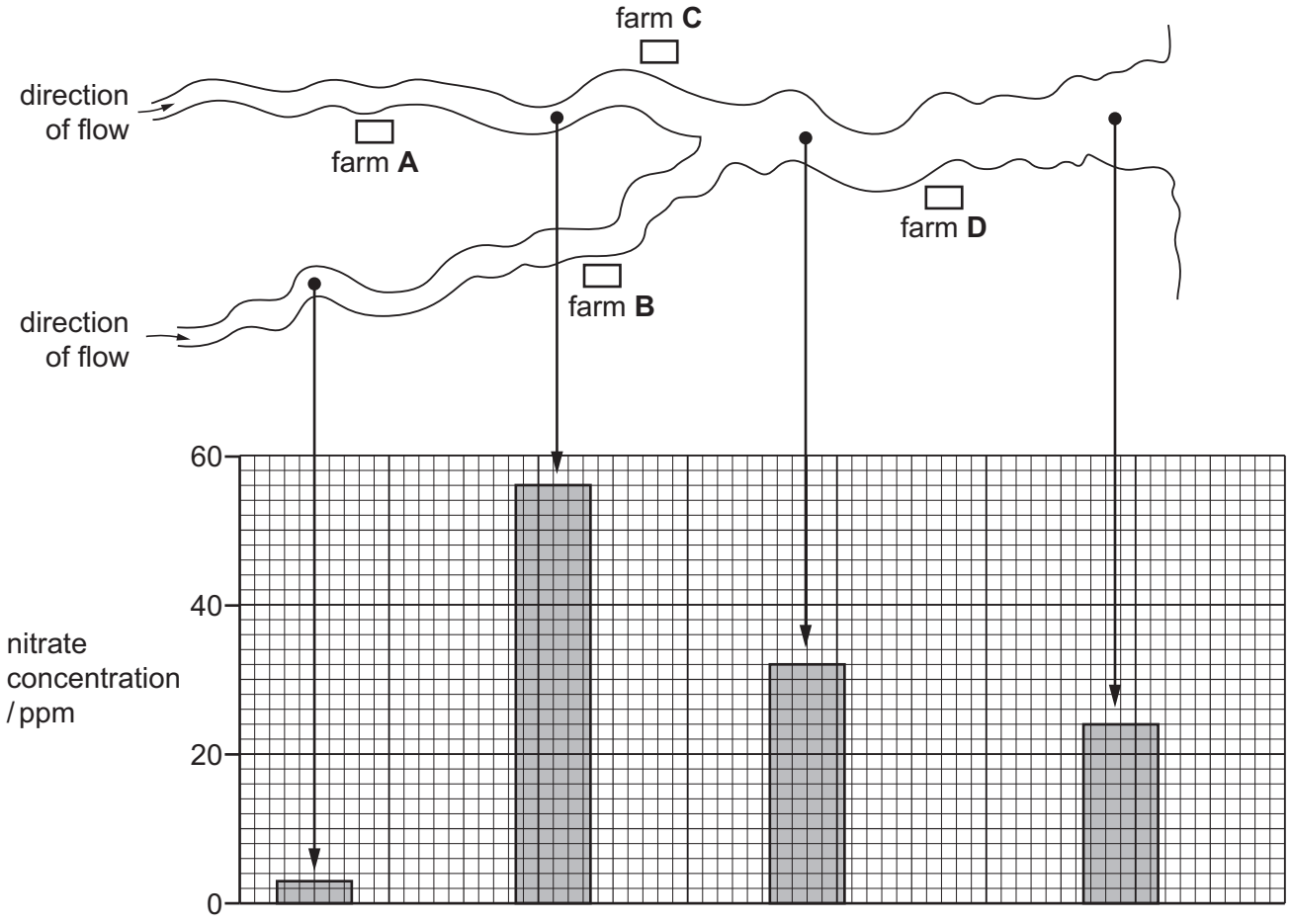
D natural selection

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40 The diagram shows the positions of four farms and the concentrations of nitrate at different points in a river.

Which farm is likely to have been using too much fertiliser on its land?



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