Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

BIOLOGY **0610/23**

Paper 2 Multiple Choice (Extended) **October/November 2018**

45 minutes

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

* 9 7 7 8 2 7 0 2 7 4 *

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.

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

This document consists of **18** printed pages and **2** blank pages.

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1 The Venus flytrap is a plant that feeds on insects. When a fly lands on the leaf, the leaf folds very quickly and traps the fly. The leaves produce enzymes which digest the fly.

Which characteristics of living organisms are involved?

A excretion, growth, nutrition

B movement, excretion, nutrition

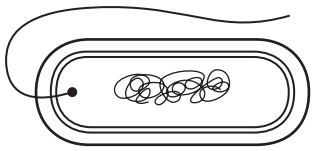
C movement, sensitivity, growth

D movement, sensitivity, nutrition

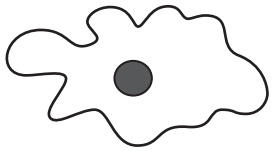
2 The diagrams show four organisms not drawn to the same scale.

Which organism is a prokaryote?

A

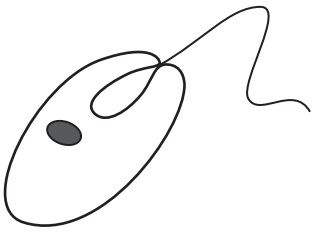


B



not to scale

C



D



3 Sunflowers have yellow flowers.

Which cell structure is found in sunflower leaves but **not** in the petals of the flowers?

A cell membrane

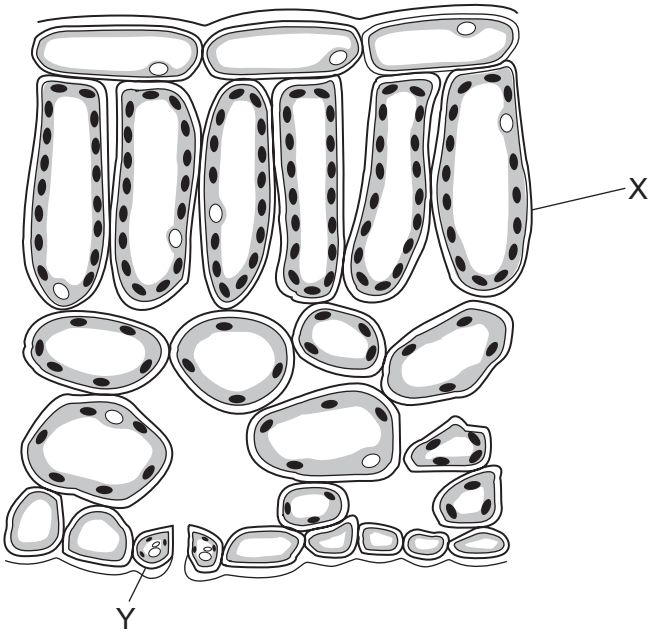
B cell wall

C chloroplast

D vacuole

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4 The diagram shows part of a leaf in cross-section.



Structures X and Y are both part of the same

A cell.

B organ.

C tissue.

D vessel.

5 How do carbon dioxide and oxygen move into and out of a mesophyll cell?

A active transport

B diffusion

C respiration

D transpiration

6 Which process is involved in the uptake of glucose by the epithelial cells of kidney tubules?

A active transport

B diffusion

C osmosis

D transpiration

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7 The data show the concentrations of sugar and starch in an onion.

total sugar including reducing sugar / g per 100g	starch / g per 100g
3.7	0.0

The onion is tested with Benedict's solution and iodine solution.

Which set of results is correct?

	Benedict's solution	iodine solution
A	blue	blue-black
B	blue	brown
C	brick red	blue-black
D	brick red	brown

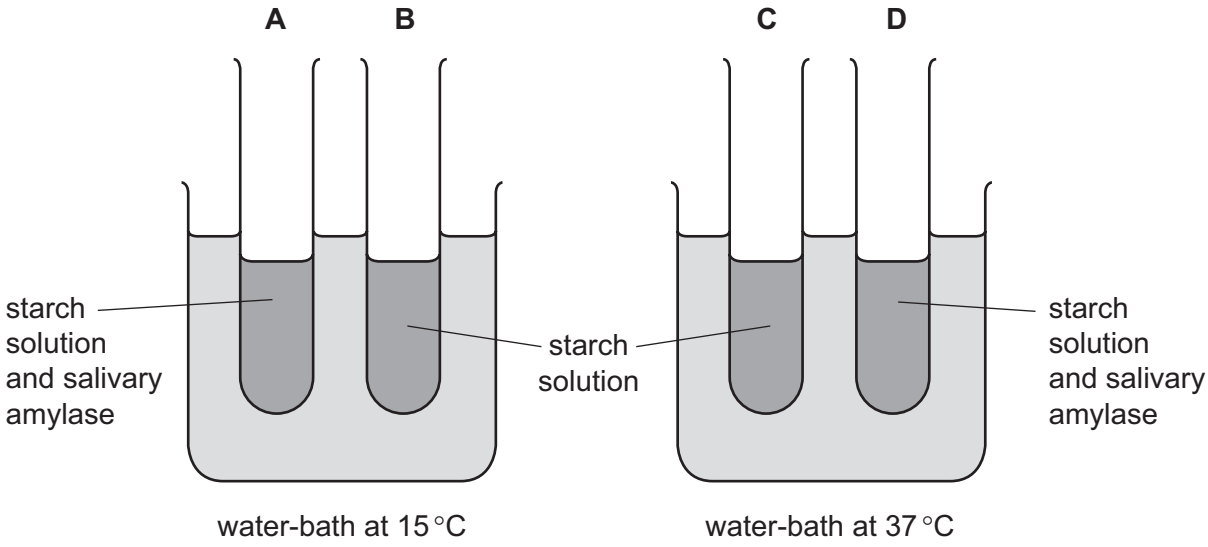
8 Which processes depend on the fact that water is a solvent?

	evaporation from the spongy mesophyll cells	glucose transported in blood plasma	movement of water by osmosis	loss of sweat from the skin surface
A	✓	✓	✓	✓
B	✓	✓	✓	✗
C	✓	✗	✗	✓
D	✗	✓	✓	✗

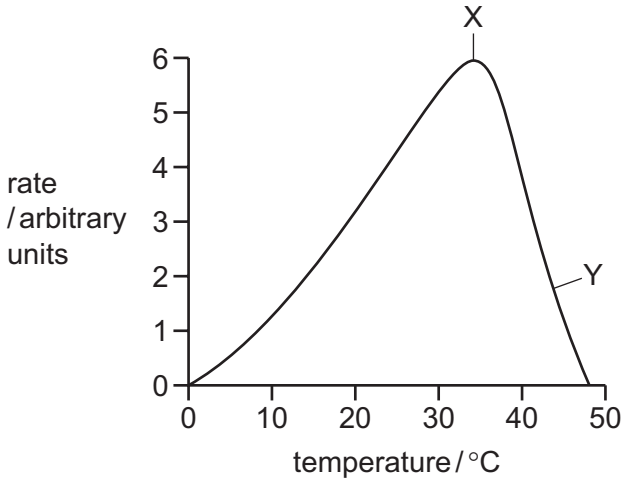
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9 The apparatus shown is used for an experiment on starch digestion.

Which test-tube contains the most sugar after 20 minutes?



10 The graph shows how an enzyme-controlled reaction is affected by temperature.



Which statement explains the change in activity between X and Y?

A There are more effective collisions.

B There is a change in the enzyme shape.

C There is more substrate present.

D The kinetic energy of the molecules has increased.

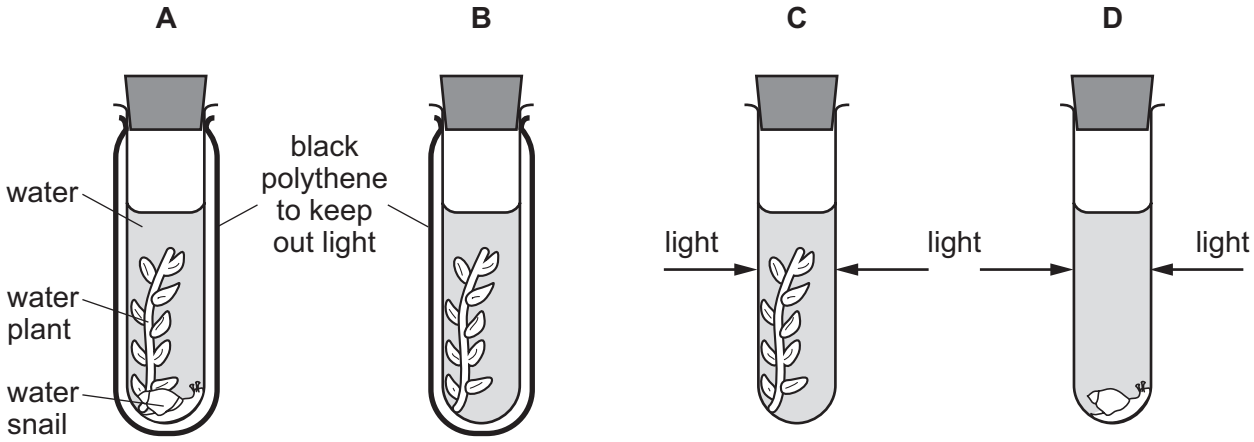
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[Turn over

11 An experiment was carried out using the apparatus shown.

The carbon dioxide content of the water in each test-tube was measured at the start and again three hours later.

In which test-tube would there be a decrease in carbon dioxide content?



12 Which region in the leaf of a green plant contains phloem?

A palisade mesophyll

B spongy mesophyll

C upper epidermis

D vascular bundle

13 What is the result of a diet lacking iron?

A bleeding gums

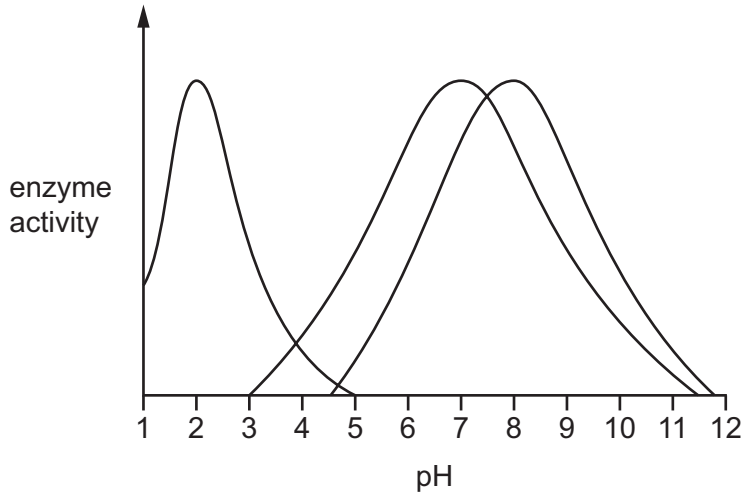
B poor wound healing

C reduced number of red blood cells

D weak bones and teeth

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14 The diagram shows the activity of salivary amylase, pancreatic lipase and stomach protease at different pH levels.

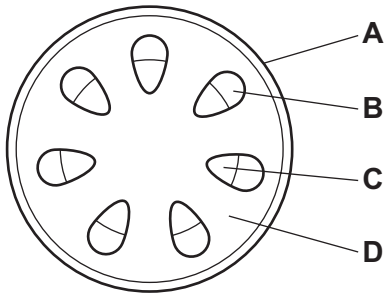


From the graph, what is the optimum pH for the protease enzyme?

A 2.0 **B** 3.5 **C** 7.0 **D** 8.0

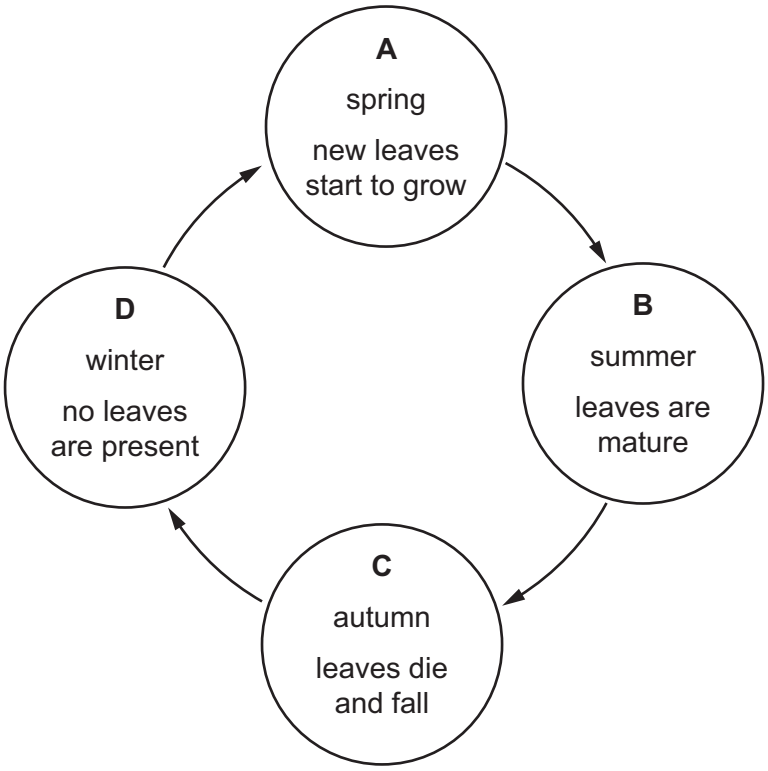
15 The diagram shows a section through the stem of a dicotyledonous plant.

Which part transports water and mineral ions?

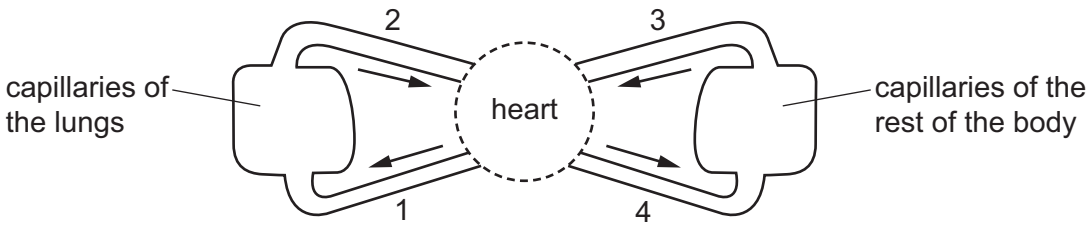


16 Roots and leaves both act as a source and a sink for sucrose and amino acids at different times during the year.

At which point in the year are the roots most active as a source?



17 The diagram shows a circulatory system.



Which vessels carry oxygenated blood?

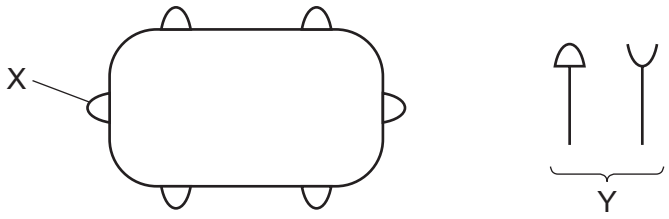
A 1 and 2 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

18 What happens to the heart valves when the ventricles contract?

	atrioventricular valves	semilunar valves
A	valves close	valves close
B	valves close	valves open
C	valves open	valves close
D	valves open	valves open

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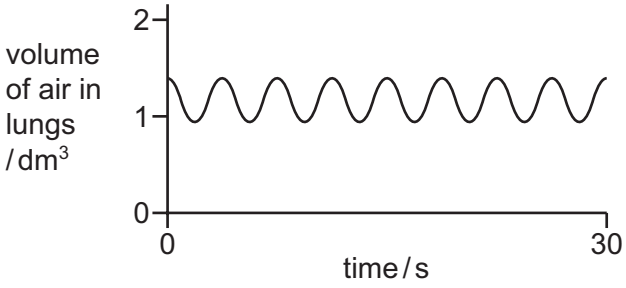
19 The diagram with the structure labelled X shows a bacterium with proteins on its surface. The diagram labelled Y shows proteins made by the human body.



Which row shows the correct combination for destroying the bacterium?

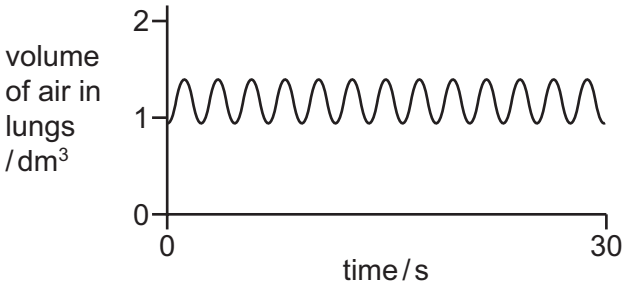
	name of X	name of Y	correct shape of Y
A	antigen	antibody	
B	antibody	antigen	
C	antigen	antibody	
D	antibody	antigen	

20 The graph shows changes in the volume of air in the lungs of a person at rest, over a period of 30 seconds.

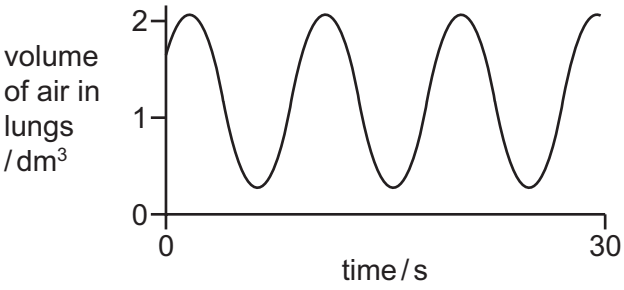


Which graph shows changes in the volume of air in the lungs of the same person immediately after they have done five minutes of vigorous exercise?

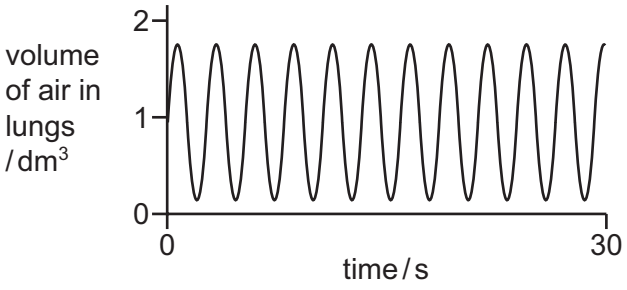
A



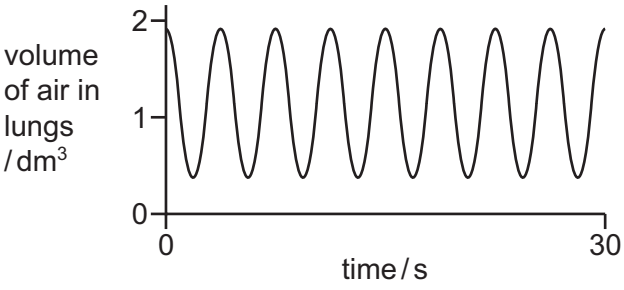
B



C



D



21 Glucose is required for respiration.

Which other molecule is required for aerobic respiration?

A carbon dioxide

B nitrogen

C oxygen

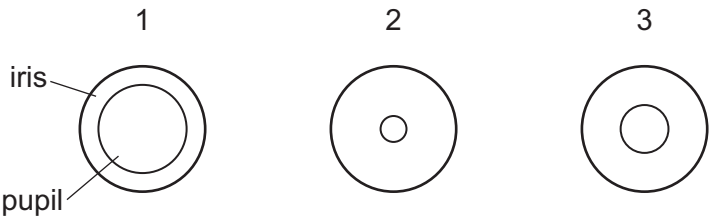
D water

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22 Which row correctly shows the organ where each substance is excreted?

	carbon dioxide	excess water	salts	urea
A	kidneys	liver	lungs	lungs
B	liver	liver	liver	skin
C	lungs	kidneys	kidneys	kidneys
D	lungs	kidneys	liver	skin

23 The diagram shows the appearance of the iris and pupil in three different light conditions.



Which row shows the size of the pupil of the eye in each light condition?

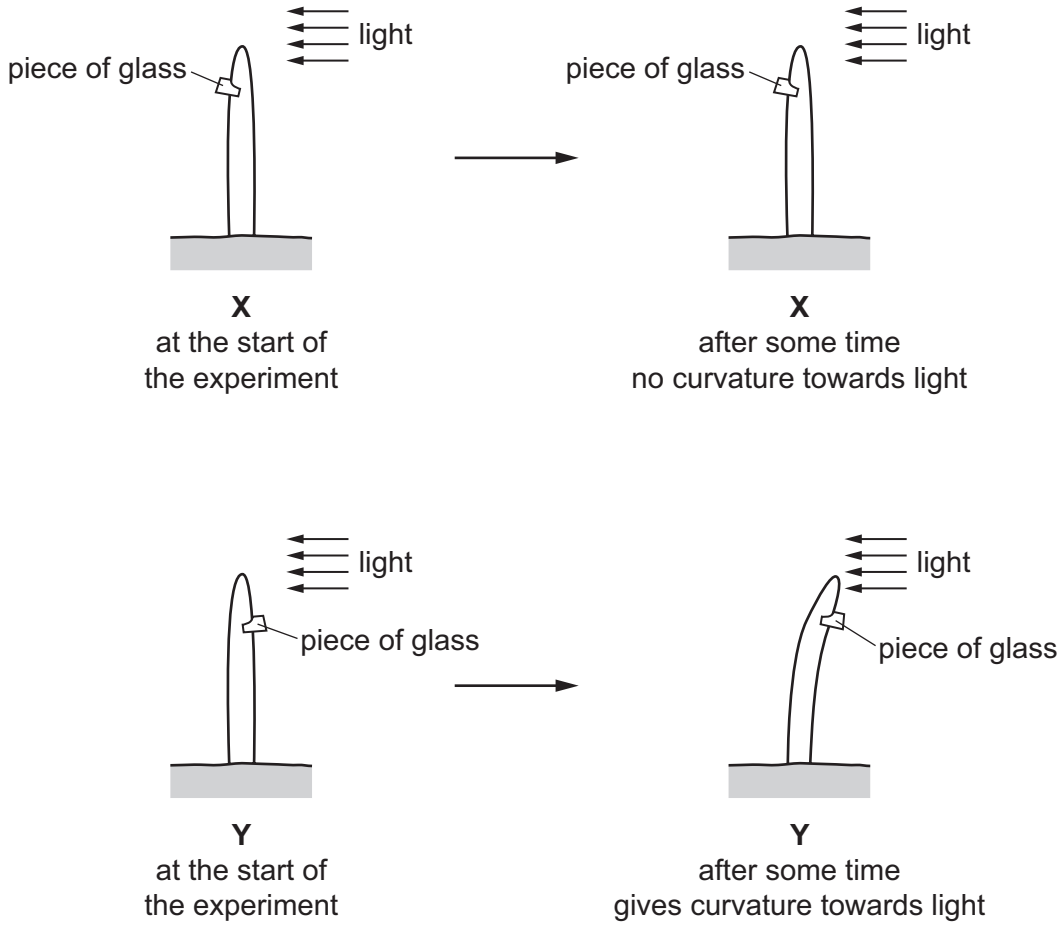
	no light	moderate light	bright light
A	1	2	3
B	1	3	2
C	2	1	3
D	3	2	1

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[Turn over

24 A student used two seedlings X and Y to investigate phototropism.

The diagram shows their investigation.



Which statement explains the difference in results between **X** and **Y**?

A The piece of glass destroyed the auxin on the shaded side of the seedling.

B The piece of glass destroyed the auxin on the side of the seedling facing the light.

C The piece of glass in **X** stopped the auxin travelling down the shaded side of the seedling.

D The piece of glass in **X** stopped the auxin travelling down the side of the seedling facing the light.

25 In a mammal, body temperature is regulated by negative feedback.

As a result of negative feedback, what happens in the mammal's body as the temperature of the external environment decreases?

A relaxation of hair erector muscles

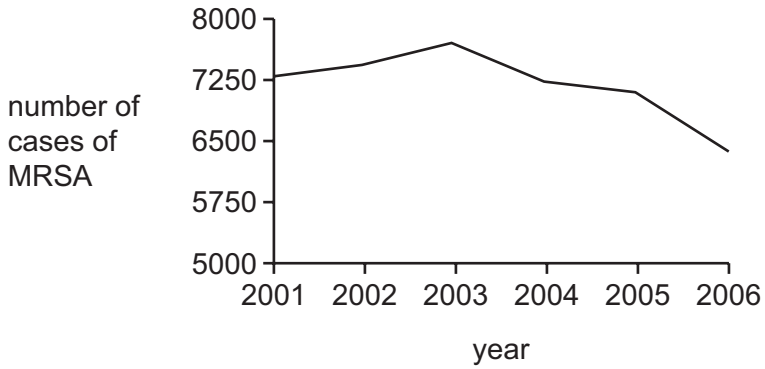
B sweating

C vasoconstriction

D vasodilation

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26 The graph shows the number of cases of MRSA in one country between 2001 and 2006.



Between which years was the **greatest** change in the number of cases of MRSA seen?

A 2002 and 2003

B 2003 and 2004

C 2004 and 2005

D 2005 and 2006

27 Pollen grains are transferred from the anthers to the stigma. The pollen grains adhere to the sticky stigma. The statements describe what happens next.

1 The pollen grain grows a pollen tube.

2 The pollen tube enters the ovule.

3 The pollen tube grows down the style.

4 The male nucleus fuses with an egg cell nucleus.

In which order do these stages occur?

A $1 \rightarrow 2 \rightarrow 4 \rightarrow 3$

B $1 \rightarrow 3 \rightarrow 2 \rightarrow 4$

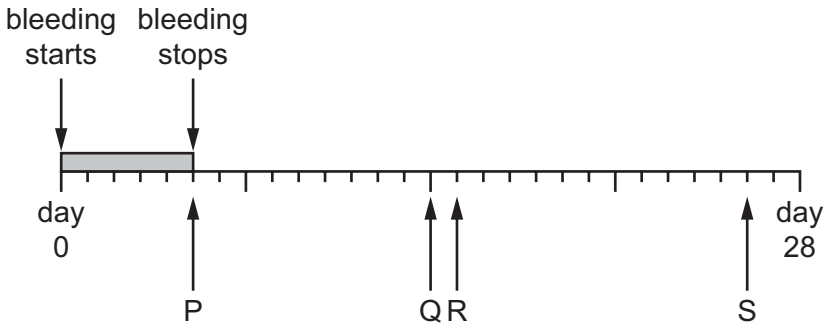
C $2 \rightarrow 3 \rightarrow 1 \rightarrow 4$

D $3 \rightarrow 1 \rightarrow 4 \rightarrow 2$

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[Turn over

28 The diagram shows a woman's menstrual cycle.



On which day does ovulation occur, and on which day could fertilisation occur?

	ovulation	fertilisation
A	P	R
B	P	S
C	Q	R
D	Q	S

29 Which method of contraception could also help prevent the spread of HIV?

A condom

B contraceptive pill

C monitoring cervical mucus

D vasectomy

30 Which name is given to different versions of a gene?

A allele

B chromosome

C length of DNA

D protein

31 Which feature of meiosis ensures that the zygote is diploid?

A Chromosomes are duplicated.

B Four gametes are formed.

C Genetically different gametes are formed.

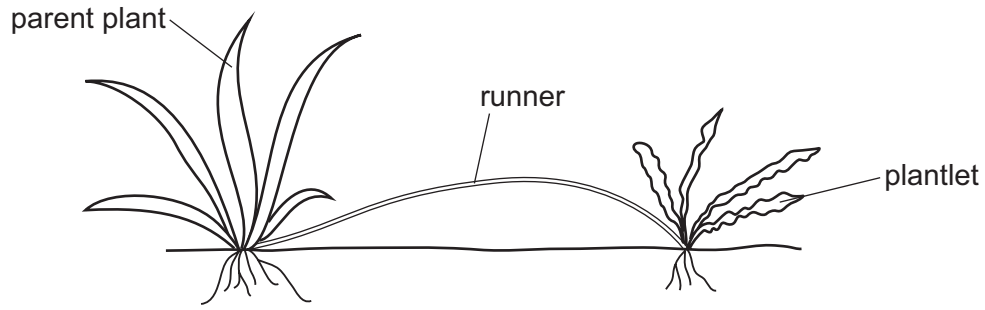
D Haploid gametes are formed.

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32 Which genotypes result in a person having blood group A?

A I^AI^A and I^AI^B **B** I^AI^A and I^AI^o **C** I^AI^o and I^oI^o **D** I^AI^o and I^AI^B

33 The diagram shows a plant reproducing asexually by growing a plantlet from a runner. The leaves of the plantlet appear different to the leaves of the parent plant.



Which statement explains the difference in the leaf shape of the plantlet?

A A mutation has occurred in the genes of the plantlet.

B The plantlet inherited the genes from the parent plant.

C The plant was produced by meiosis.

D The plantlet was produced by the fusion of gametes.

34 What results from the process of natural selection and adaptation?

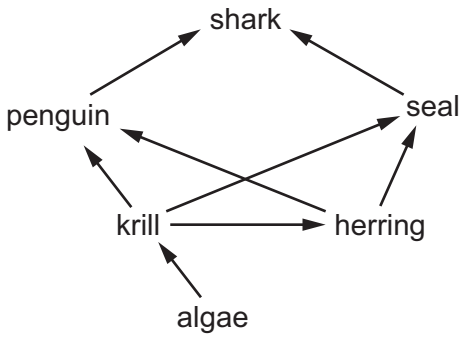
A artificial selection

B evolution

C reproduction

D selective breeding

35 The diagram shows a food web in the ocean.



Which two animals are secondary **and** tertiary consumers?

A penguin and herring

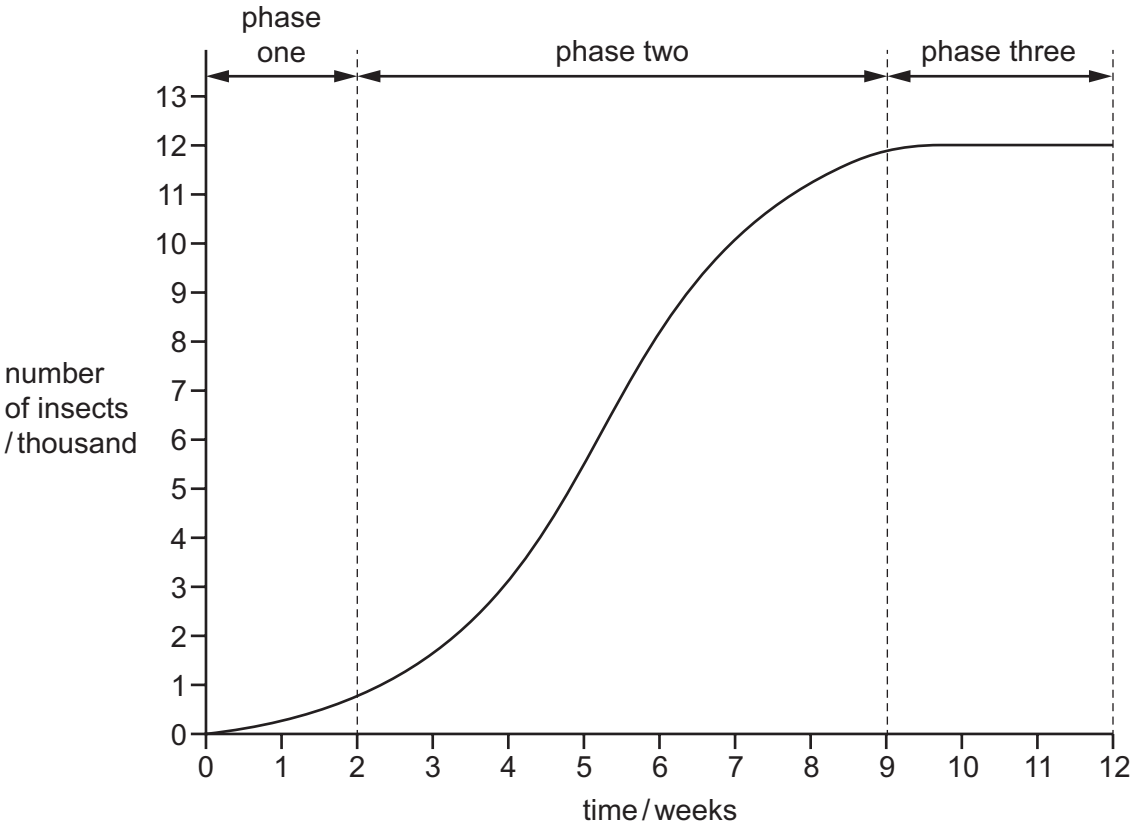
B penguin and shark

C seal and penguin

D seal and shark

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36 A student was given data on the change in the number of insects in a population over a period of twelve weeks. The student was asked to name and label each phase.



What is the correct label for phase three?

A death phase

B exponential (log) phase

C lag phase

D stationary phase

37 Insulin is now produced using genetically modified bacteria. Previously, diabetics were given insulin extracted from the pancreas of animals.

Why is the insulin from bacteria regarded as a better ethical choice?

A insulin is produced from bacterial DNA

B it is accepted by vegetarians

C plasmids are involved

D the genetic code is shared

38 Plasmids are often used in genetic engineering.

What is a plasmid?

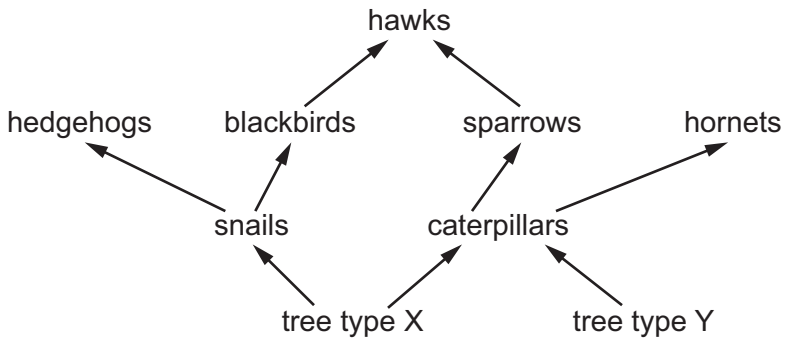
A bacterial cell

B gene

C loop of DNA

D protein

39 The diagram shows a food web in a woodland.



What is most likely to happen if all of tree type X is removed by humans?

A The carbon dioxide concentration in the woodland will decrease.

B The population of hedgehogs will increase.

C The population of hornets will increase.

D The population of sparrows will decrease.

40 The increased availability of nitrates in rivers and lakes can result in the death of fish.

Which statement explains why fish die in rivers and lakes containing a high concentration of nitrates?

A The increase in water plants stops the fish swimming.

B There is an increase in anaerobic respiration by plants.

C There are fewer water plants for fish to eat.

D There is an increase in aerobic respiration by decomposers.

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